

# The Dock and Harbour Authority

No. 234. Vol. XX.

Edited by BRYSSON CUNNINGHAM, D.Sc., B.E., F.R.S.E., M.Inst.C.E.

APRIL, 1940

## Editorial Comments

### Tientsin.

Tientsin, the port of Peking, the former capital of China, which forms the subject of the leading article in this month's issue, is the locus of a cosmopolitan accretion of many nationalities: British, French, Japanese, Italian, German, Russian, Belgian and Austrian, each of which at one time possessed a "concession" or district of local autonomy, obtained by various means from a compliant native government. Only the first four of these Concessions still continue to exercise their functions, but owing to the state of hostilities at present existing between the Japanese and the Chinese nations, they have been a source of much trouble and, in particular, the British Concession has given rise to a series of incidents of a grave international character which might have involved Great Britain in war, and probably would have done so, had the British Government not been pre-occupied with political events in Europe.

It would be inappropriate and serve no useful purpose from a port point of view to detail the complicated racial questions at issue, and it must be admitted that it is often difficult to separate political from commercial interests. Tientsin was among the chief of the treaty ports opened in 1860 by the Chinese to foreign trade, and up to the date of the recent outbreak of hostilities, this had a value of some ten millions sterling annually. As will be seen from Dr. Chatley's article, the imports of Tientsin are of a miscellaneous nature, chiefly manufactured articles of Western origin, whereas the exports are almost entirely of an agricultural and pastoral kind, influenced by the alluvial character of the Great Plain, on a part of which Tientsin stands.

At the present time the situation is still obscure and what will be the ultimate outcome of the territorial conflict in progress in the Far East cannot be foretold. Events happen so erratically and have such far reaching consequences that it is quite within the bounds of possibility that the European problem may involve the Asiatic in its final solution.

### Port Rates.

In his address at the Annual Meeting of the Dock and Harbour Authorities' Association, which was briefly reported in our last issue, Lord Ritchie, the Chairman, made reference to the very important question of Port Charges and the effect thereon of rising costs and wages. The upward trend has been in evidence for some time, and a considerable number of dock undertakings, with the approval or, at any rate, with the tacit assent of the Ministry of Transport, have already raised their schedules, although, so far, only to a moderate extent and certainly within the limits of their statutory powers.

The factors influencing these rises were in operation during the war of 1914-18, but there is an important difference in the present situation in that at the outbreak of the present war the level of charges generally was already some 50 to 60 per cent. above the level of charges in 1913. Any further rises, therefore, must affect the economic position of the country more drastically and more detrimentally than in the previous instance. The rises which have already taken place are of the order of 7½ to 10 per cent., and may be considered as not of serious importance. None the less, the Ministry of Transport is keeping a close watch on the situation and, indeed, in one case, has intervened to cut down part of a proposed increase.

An important aspect of the matter is the distinction to be drawn between the railway-owned and the non-railway-owned, or independent dock systems. In the last war, the railways were taken over by the State on terms of a guaranteed income which

enabled them, to some extent, to ignore competitive dock rates; though, after a time, in consequence of agitation by the independent docks, the charges were raised pari passu, and there was a gradual increase all round to something like 150 per cent. above the pre-war standard.

The conditions of control of the railways in the present conflict are such as to induce the railway companies to earn their own revenue, so that they are bound to take into account the effect of rising costs, and Lord Ritchie was able to indicate that a community of interest is causing the Association to keep in closer touch with the railway companies, particularly with regard to emergency problems. In the Memorandum attached to the Annual Report of the Association, signed by Sir Lionel Warner on their behalf, and by Lord Stamp, Sir Ralph Wedgwood and Sir J. Milne for the railways, there are agreed proposals for regular and formal meetings between the sides, and arrangements for the interchange of information on matters of joint interest. This is a commendable course of action and should result in the maintenance of the proper relativity of inland and coastwise rates between competing ports or docks, a matter which is so important in the public interest.

### British Dry Docks and the War.

A significant consequence of the reckless aerial and torpedo attacks on shipping by the German naval command is the intense activity now being displayed in repair work at the numerous dry docks along the British coastline. Everywhere the repair yards are working at high pressure. Reports in the press announce, for instance, that one important firm on the Mersey has "had to strain every nerve to keep pace with the requirements of owners." At Cardiff, "the dry docks are regularly occupied by vessels, and as soon as one job is finished, another is immediately commenced." Similar statements might be quoted from practically every port along the seaboard of Great Britain. "It is an ill wind that blows nobody any good" and regrettable as is the cause of this incessant activity, it undoubtedly provides work for many hands, and there are even complaints of a shortage of skilled labour. No further developments appear to have occurred in South Wales in regard to the agitation recently promoted for the construction of additional dry dock accommodation at South Wales ports, and it may be assumed that while there has been greatly increased pressure, yet the demand has not yet revealed an actual insufficiency in the existing accommodation. Even if it did, the shortage could not be made good at a moment's notice, for dry docks are constructional undertakings of some magnitude, involving an appreciable amount of time as well as considerable financial outlay. Hence it is to be hoped that demands will continue to lie within the capacity of existing installations to cope with them.

### The Port of Viipuri.

Amid all the welter of her military misfortunes, the loss of the Port of Viipuri, or Viborg, is a sad blow to Finland. Situated at the head of a fjord on the North coast of the Gulf of Finland, with extensive rail, road and waterway connections to the interior of the country, Viipuri, a town until recently of over 80,000 inhabitants (now, alas! only a smouldering heap of ruins) was a leading centre of Finland's export trade, ranking next to Helsinki, the capital. It was the main outlet for a wealth of forest products, which, by means of the Saimaa Canal, came from the vast region of the great lake hinterland lying to the North. Further, there was the output of the highly industrialised districts of the Lappeenranta and Vuoksi valleys, where the

**Editorial Comments - continued**

hydro-electric power of the country is largely developed. This, if it has not already done so, is clearly intended to fall into Soviet hands, to be exploited in a manner which, the recent history of Russian industrial undertakings shows, does not lead to efficiency or economy in working. In any case a considerable part of the trade of the district is, or will be, lost to Finland, which thereby suffers a serious set-back. The confiscation of Hango, moreover, which controls the entrances to the Gulfs of Finland and of Bothnia, is a menace to freedom of access from the sea. Yet, there is always the hope that the wheel of Fortune may make one of her unexpected turns. The end of the story is not yet written.

**The Maiden Voyage of the Queen Elizabeth.**

Port interests and shipping interests, despite some obviously separate and independent problems, are naturally inextricably inter-connected and some notice of the advent on the high seas of the "largest liner in the world," is not only appropriate but essential to these columns. And yet how different the secret, if not surreptitious, slipping away across the Atlantic of the latest and largest passenger ship, compared with the fanfares and trumpetings which accompanied the "Queen Mary" on her popular maiden trip. Nevertheless, amid the perils of war and the dangers of submarine attack, there is abundant ground for congratulation on the successful transit of the Atlantic and a sense of relief that no harm has come to this latest and most wonderful product of the Clyde shipyards.

Strangely enough, it is even conceivable that the passage through the narrow channel of the Clyde on February 16th was more hazardous for the 83,673 gross tons vessel than the wide-expanses of the open sea. We are told that there were some anxious moments when the great ship got into difficulties near Rashilee Light, almost precisely at the same point where the "Queen Mary" kissed the bank" on her own passage down the Clyde. Twice, in fact, the "Queen Elizabeth" was sheered by the incoming tide into positions of potential danger from which, however, she was successfully extricated by her attendant fleet of tugs; and the 15 mile journey was ultimately accomplished in a little over four hours.

However inconspicuous may have been the circumstances of her début, heartfelt wishes will go forth for a long and successful career for the glorious "Queen Elizabeth," which, with an overall length of 1,032-ft. and the gross tonnage stated above, is the world's largest ship. It is expected that she will also prove to be the fastest. Her average speed for the first transatlantic trip is given as 24½ knots, but it is confidently predicted in Clydebank technical circles that she will have a service speed of 31½ knots, with ability to increase this to 32½ knots whenever necessary. The record set up by the "Queen Mary" on a round trip in August 1938 was 30.99 knots westbound and 31.72 knots eastbound.

**The Trade of the Port of Rotterdam.**

In our last issue there was a comment based on certain remarks made by the Burgomaster of Rotterdam respecting the pronounced falling-off in the trade of the port by reason of the naval blockade, and we expressed the view that worse would probably befall. This is now clearly evident from the fact that the British Navy recently took possession of 100,000 tons of German coal which had been loaded into sixteen Italian vessels at Rotterdam. Although subsequently released in deference to representations by the Italian Government the embargo has not been lifted and further cargoes are prohibited. With the stoppage of coal exports from German mines, Rotterdam will lose the benefit which she has so long enjoyed of being the great port of transhipment for coal from the Rhine and Westphalia. Although transhipment is the only service given at the port, it is none the less a valuable source of revenue and its loss will undoubtedly be felt. Italian feeling is strong on the deprivation of her supplies from her axis partner, but Rotterdam is also entitled to sympathy for the loss which, under the fortunes of war, she too has sustained. It is stated that in consequence of the loss of the coal transit traffic, 1,200 dock labourers are to be dismissed.

**The St. Lawrence Ship Waterway.**

After the heated controversy aroused in the earlier stages of its promulgation, it is not surprising that the St. Lawrence Ship Waterway Scheme should still encounter a good deal of antagonism, notwithstanding the fact of its official adoption by the governments of the two countries concerned. At the recent annual meeting of the Shipping Federation of Canada, the President, Mr. M. Mc D. Duff, voiced the strong opposition of the Federation to the project, which he characterised as prohibitively costly and quite uncalled for by the circumstances of the case. "Surely," said Mr. Duff, "it cannot be contended that our country is suffering at the present time from lack of efficient transportation facilities, or from lack of outlets to the sea; the contrary, in fact, is the case. There is no justification for our becoming involved, especially, in a critical time like the present, in any navigational project of this magnitude."

It is not the province of this Journal to side with either of the parties to the dispute, especially in a matter so remote from Great Britain and involving a variety of important issues, but we feel that the preponderating arguments must lie with the promoters of the scheme which has been adopted jointly by the Governments of Canada and the United States. Looking at the matter dispassionately (which perhaps may be less easy for the local shipping interests and bodies of the Port of Montreal) it does seem that the construction of a deep waterway for shipping right through from the Atlantic to the head of the Great Lakes, will mean an enormous saving in money, time and trouble, and that Canada would hardly have embarked upon the construction of the Welland Canal without a conviction that it would play an important part in the development of overseas traffic with the North American Continent.

Navigation, however, is only one of the considerations involved in the scheme. The development of the great water power resources at present latent in the succession of falls in the St. Lawrence, is scarcely less important, but this raises issues of an entirely different nature which are no concern of this Journal and we must leave the question to be settled (if, in fact, settlement has not already been attained) by those most qualified to judge the merits of the argument put forward.

**Coal Shipments and the Port of Cardiff.**

According to accounts in the press there seems to have been some difficulty of late in dealing with coal shipments at South Wales ports and, particularly, at the Port of Cardiff. Statements are current that vessels have been seriously delayed and excessive demurrage charges incurred, causing vexation and annoyance alike to shipowners and charterers. The fault does not seem to lie with the ports themselves nor with their equipment, which is ample for requirements. Apparently, it is attributable to a shortage of coal supplies from the collieries and the Government is being urged to take action to remedy the deficiency and to increase the output from the coalfields. No doubt the underlying cause is scarcity of labour, and if this is the case, it indicates some lack of foresight on the part of the Mines Department or the Ministry of Supply, which ever body is responsible for the supervision of the South Wales mining industry.

Coal is the staple export of South Wales and, indeed, a mainstay of British foreign trade, and since the Government have been impressing upon traders the essential need of increasing the volume of national exports, it seems strange in regard to a commodity so plentiful and so readily available, for which there is clearly at the present time a demand from abroad, that matters should have been allowed to drift into a state of congestion and delay, which not only detracts from the national revenue, but causes confusion and trouble in port operation, through the holding up of ships for long periods.

As a matter of fact, there has been a gratifying increase in the trade of Cardiff as a result of the revival in the Welsh steam coal export trade. Since the beginning of the war a steadily growing foreign demand for supplies has caused shippers to experience difficulty in obtaining the necessary tonnage to convey the cargoes. The loss by Germany, through the naval blockade, of her market overseas has enabled Great Britain to regain some of her old customers. Italy, for instance, at one time took nearly the whole of her coal from Great Britain, but reparations at the conclusion of the last European War and sanctions during the Abyssinian campaign, transferred the main source of supply to Germany. During the past few years, Germany sent about nine million tons of coal annually to Italy, of which some five or six million tons was shipped through the Dutch ports, chiefly Rotterdam. The cessation of this traffic accounts largely for the present situation.

**The Southern Railway Company and Southampton.**

At the annual general meeting of the Southern Railway Company, on March 21st, Mr. R. Holland-Martin, C.B., the chairman of the Company, made the following informative remarks about the Port of Southampton.

"At Southampton many of the great passenger liners were taken off their usual services at the outbreak of war and smaller vessels with other cargoes took their place. This resulted in a decline of 12.5 per cent. in the tonnage as compared with 1938, though there was a slight increase in the number of vessels entering the docks. The total volume of cargo dealt with at the docks was 5 per cent. greater than in 1938, but this was mainly due to the increase of imports, being set off by a decline in exports . . . ."

"During the past year, the Itchen Quays, which have a total length of 1,600-ft. and comprise berths 34, 35 and 36, have been widened by 38-ft. in order to allow of the depth alongside being increased from 28-ft. to 34-ft., L.W.O.S.T. This has allowed the quay to be re-modelled, and to facilitate loading on to the first floor of the transit sheds, a reinforced concrete platform, 20-ft. wide, has been constructed in front of each shed at first floor level."

# The Port of Tientsin

## The Shipping Centre of North China

By HERBERT CHATLEY.

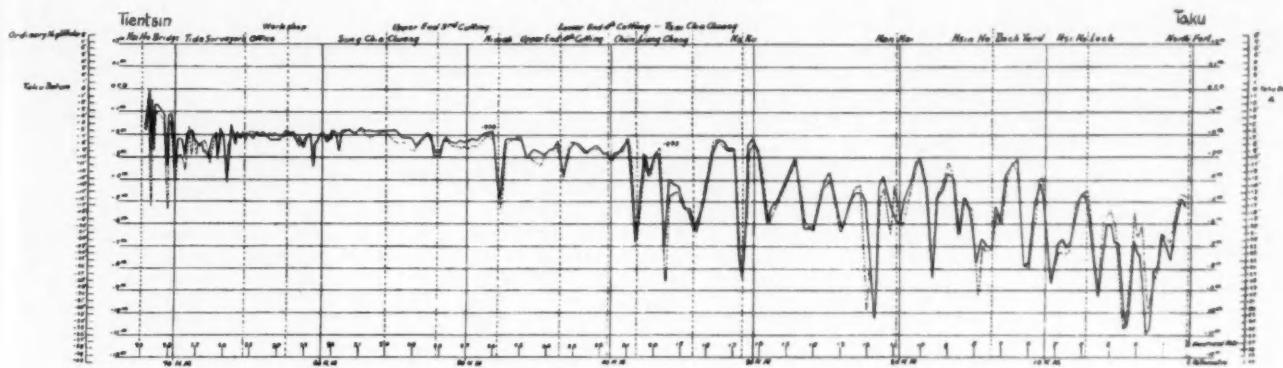


Fig. 1. Profile of the River Bed along the Fairway—November, 1935, and November, 1936.

THE City of Tientsin (T'ien Ching, "The Heavenly Ford") is quite old, having been founded in 1368 and walled in 1404. Long before the arrival of European shipping it was a major entrepot for the trade carried on by sea-going junks plying between the ports of the Yellow Sea and it was also an important halt on the Grand Canal. From the fourteenth century the latter was the principal means of communication between Central China and the new capital, Peking, and vast volumes of "tribute rice" and other commodities were shipped by this canal. The railways and steamer traffic have entirely displaced the through canal traffic, more especially since the latter was badly damaged by the great diversion of the Yellow River in the middle of the nineteenth century.

Tientsin is the effective port for the late capital, Peking, from which it is only 90 miles distant. The Grand Canal goes on to within a few miles of Peking itself, the actual terminus being at a place called Tungchou, about 10 miles from Peking, whence small canals do actually reach the city itself.

An elaborate system of rivers and canals connects Tientsin with most parts of the former metropolitan province of Chihli ("Metropolitally controlled"), now called Hopei ("North of the Yellow River"). Roads, formerly mostly just cart and camel tracks but now dirt roads traversable by well-built cars, connect with the principal towns. Camel tracks lead into Mongolia and to the north-western provinces. There are railway connections to the north-west via Kalgan to the middle reaches of the Yellow River, to the north-east to Manchuria and so by Siberia to Europe and to the south by way of Tsinan (the capital of the province of Shantung) to the Yangtze River at Pukow, opposite to Nanking. In recent years there have also been aerial connections.

In very ancient times the Yellow River ran over the site of Tientsin and the country to the south of it is seamed with old channels of that famous stream. The plain in which it is situated is therefore part of the Great Plain, which is mainly the huge delta of the Yellow River. For nearly two thousand years however the plain building in this neighbourhood has been the work of smaller local rivers, especially the Yungting Ho or Hun Ho, which comes down from the Mongolian plateau.

### Hydrography

Tientsin is situated at the head of a tidal channel termed the Hai Ho ("Sea River") which until 1903 was about 60 miles long from the city to the sea at Taku. This waterway is the joint mouth of a number of rivers of which the principal are:

(1) The Yungting or Hun Ho.

(2) The Pei Yun Ho, or northern Grand Canal, which continues north of Peking as a river coming from the hills which border Mongolia.

(3) The Hsi or Tzeya Ho, which drains the central parts of the province of Hopei.

(4) The Nanyun Ho or southern Grand Canal, which as the Wei Ho (Ho means "River"), drains the south-western part of the same province, and is connected artificially through a chain of lakes on the west side of the Province of Shantung to the Hwai River system in the Province of Kiangsu.

These rivers have an immense catchment area, say 80,000 square statute miles, and with small exceptions, it all drains through the Hai Ho. While the annual total rainfall is not high, it is concentrated in the months of June, July and August,

and in addition to this it comes in short bursts of great intensity during those months, so that the fluctuation of discharge is great and when the rain does come the run-off fraction is high. Speaking generally the hills have been stripped of vegetation in the intense demand for fuel, fodder and agricultural land so that the erosion is very great and the silt content extreme.

Owing to the ancient deposits of the Yellow River and the more recent deposits of the Hun Ho the bed of the Gulf of Hopei (or Pohai) is comparatively shallow, being still only about 15-ft. deep below low water at a distance of 7 or 8 miles offshore at the mouth of the Hai Ho.

The original sectional area of the Hai Ho in 1903 was only about 10,000 sq. ft. at mean water level. The discharge during a summer freshet often exceeds 15,000 cu. ft. per second, but fortunately it rarely happens that freshets originate in the Hun Ho and Hsi Ho (the two principal sources) simultaneously.

### Tides

At the entrance to the Hai Ho the mean range is 6.93-ft., the average water level being 4.90-ft. above the "Taku Datum." Summer levels are about one foot higher than mean and winter levels about one foot below the mean. The spring tide range is about 10-ft. and the neap about 4-ft. Highest water level is about 17-ft. above datum and lowest approximately at datum level. At Tientsin, prior to the conservancy work, the tidal range averaged only about one foot, which has now been increased to 4½-ft. The water slope in the Hai Ho is very small.

### Dimensions of the Channel

The depth of the fairway up to the city is about 5-ft. below datum, or, at ordinary high water (8-ft. above datum), 13-ft., but in the lowest 18 miles or so the through low water depth is about 10-ft. giving a navigable depth of 18-ft. at ordinary high water. The width of the channel at low water diminishes from about 600-ft. near the mouth to about 150-ft. at the city. These depths and widths are much better than existed formerly.

### The Bar

The principal obstruction to shipping is the entrance bar off Taku. At the time when conservancy operations commenced



Mattress supported by Oil Drums before sinking.

### Port of Tientsin—continued

this had only a depth of one or two feet below datum level. It now is rarely less than 6-ft. below datum and may be as much as 9-ft. enabling vessels drawing say 16-ft. to cross at ordinary high water.

The greatest actual draught recorded was in 1925 when a ship called the "Pei Chang" arrived at Tientsin with a draught of 18-ft. 3-in. Prior to the conservancy operations the maximum draught entering was only about 11-ft. and as a matter of fact few vessels ventured the voyage. In 1925 no less than 1,100 ships with draughts exceeding 13-ft. reached Tientsin. The usual maximum is 13 to 14-ft.



Building Timber Frame to Support Mattress.

Larger vessels have to lay in the roads outside and discharge their cargo into lighters and their passengers into tenders. Quite a number of large vessels (usual maximum say 12,000 tons gross) do so, but the inconvenience and delay is serious and owing to the great distance from the shore and bad weather the landing may prove unpleasant and expensive.

#### Climate

North China presents rather rigorous weather conditions. The winters are very cold with some snow and occasional strong continental gales which in the spring become bad dust storms. The summer is hot and damp with occasional gales from the southern typhoon area. Autumn is the best time and resembles a good English summer.

The maximum recorded summer temperature is 104.72 degrees (F.) and the minimum recorded winter temperature is 1.3 degrees (F.) below zero.

The average during July is 80.8°; the general average for the year 55.2°, and the average for January 27.9°. The average daily range of temperature is 17 degrees in January and 16 degrees in July, so that in July and August there are many days which have temperatures of about 90 degrees and in January and February there are many days in which the temperature falls to about 20 degrees.

The general wind direction is easterly, veering from N.N.W. in January to S.S.E. in July. There is a region of very high pressure over Mongolia in the winter from which dry air streams outwards carrying a great deal of dust, and in the summer there is a low pressure area in western China towards which spirally flows a return current of moisture laden air from the China Sea. The locally generated eddies accompanying these annual changes appear as violent storms which compare with but not quite equal the typhoons which occur further south.

Snow may occur between the end of November and the beginning of March, but as the average precipitation in the months of December, January and February only totals about half-an-inch it is rare that the snowfall is sufficient to be inconvenient. Ice may however be very serious. The season 1935-6 was the severest that had been experienced since the conservancy authorities had commenced to use icebreakers and the 1936 report gives a considerable amount of information. "The severity of the winter caused the formation of enormous ice-fields in the Gulf of Pohai (Pohai means "the Northern Sea"). These ice-fields extended at times into the Gulf as far as Laotiehshan Promontory. The approach to the port was, therefore, made extremely difficult. By the end of January easterly winds set in, causing the gulf ice to accumulate in front of the Taku Bar. Many vessels, especially those of weaker power, were caught in these ice-fields and drifted helplessly around according to the direction of the winds and tides." The ice season in the winter referred to was from the 8th December to the 15th March. On the 3rd February the Harbourmaster gave out a warning to the effect that "ice conditions in the Gulf of Pohai were impracticable and that mariners were advised that they would navigate at their own risk."

That year was exceptionally bad, but in almost all years there is some difficulty and prior to 1914 there was no steamer traffic during the ice season. The conservancy ice-breakers are since that time usually able to cope with the conditions.

#### History

As the result of war between China and England and France over the long-standing question of inequality of treatment of non-Chinese, Tientsin was opened to foreign trade in 1860, and certain areas were assigned by the Chinese Government for the residence of non-Chinese merchants. These areas, termed the Concessions, lie to the south and east of the old city and border the banks of the Hai Ho, which thus forms the harbour of Tientsin. It should be explained that, owing to the entirely different laws and customs of China from those of occidentals, it was necessary to apply a system of "extra-territoriality" to non-Chinese, such as had been found successful in the Near East. Under this system, the occidentals remained subject to their own laws in all matters except certain fixed trade and land taxes, and their Consuls were responsible for them to the Chinese Government. Such Consular jurisdiction has been the subject of much heart-burning amongst the Chinese in recent years, but it must be remembered that, at the time when it was instituted, no other modus vivendi was possible and it has been the isolation from Chinese politics and revolutions that enabled the Concessions to prosper to the extent which now renders them the object of envy. All except the Japanese, British, French and Italian concessions have been resumed by the Chinese but it is in those four that the principal shipping activities occur.

From 1860 Tientsin has played a very important part in China's foreign trade, concentrating the products from and imports to about one-third of the area of China. Prior to 1900 the cargoes from steamships were practically all landed at a place called Tangku, just in the lowest bight of the Hai Ho and some 37 miles by road from Tientsin, and were lightered up to the city. Nevertheless the quantities and values were quite appreciable and, in addition to its status as a prefectural city, Tientsin became the fourth most important trading centre in China, the others being Shanghai, Hankow and Canton.

As the trade grew and the size of ships from Europe, Japan and America expanded, there was increasing dissatisfaction with the navigational difficulties of the river. This channel was narrow, tortuous, cumbered with shifting sandbanks, subject to alternate floods and periods of extreme shallowness and generally unsuited to steam navigation except by tugs of small draught.

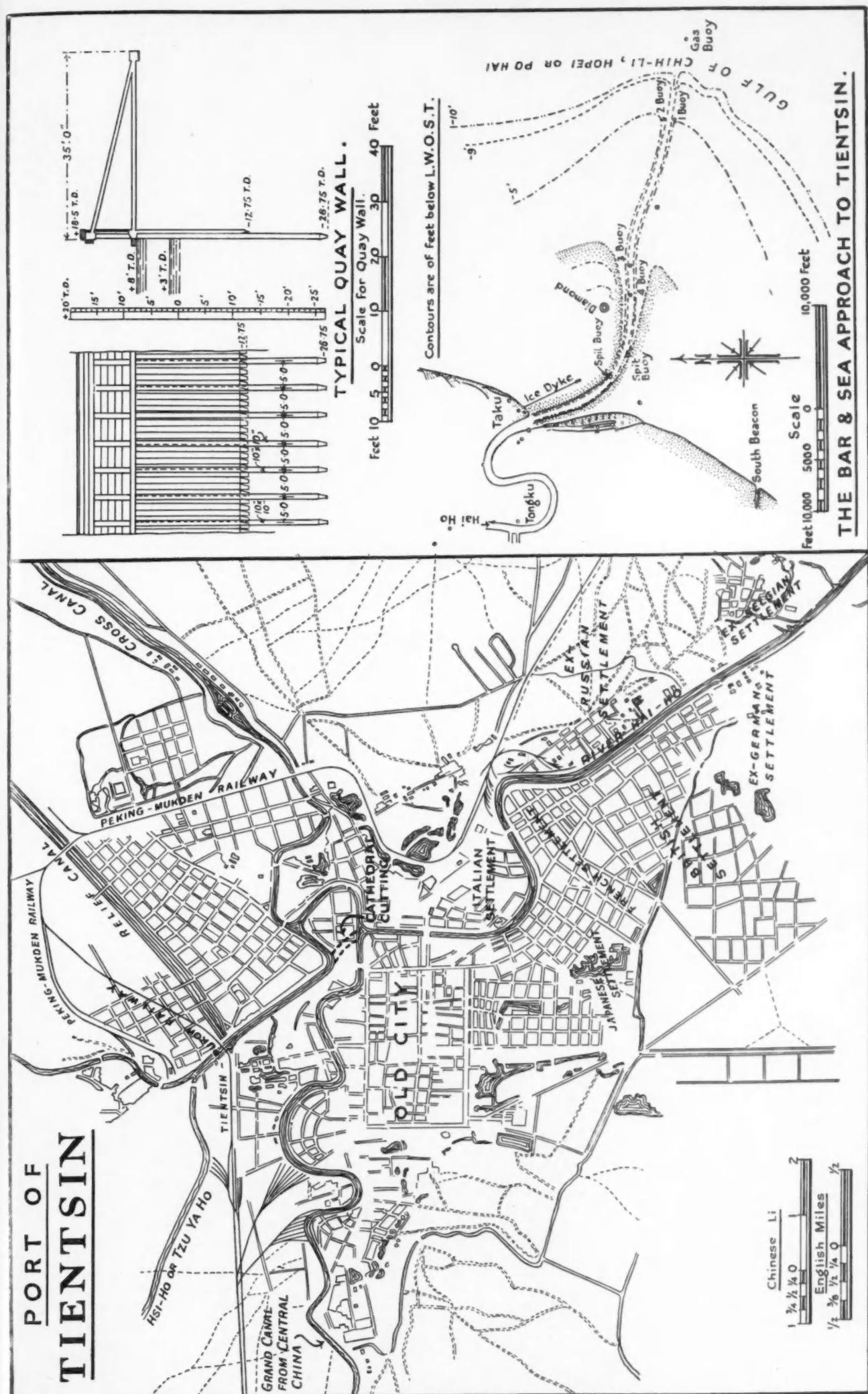
As the result of the International war against China in 1900, due to the "Boxer" rising, the Chinese Government was induced to agree to the formation of the Hai Ho Conservancy Commission, whose duty it was to improve the river. Up to a point it has been remarkably successful, as will be explained later. From 1927 a new phase has developed, in which the Chinese Government itself has participated and although so far little has been done, except in respect to the partial control of the Hun Ho, the tendencies for the work to come more and more under national control will doubtless reappear when the present conflict with the Japanese has been decided.



Sinking Mattress.

#### "The Great Northern Port"

In 1919, Dr. Sun Wen (generally known in Europe as Sun Yat-sen and in China as Sun Chungshan) issued a scheme for "The International Development of China," which was a grandiose project for the modernisation of China, with a considerable amount of detail, much of it of a highly speculative character. A few years later he was recognised as the national "Leader" in the sense which Mussolini and Hitler have made famous, and



### Port of Tientsin—continued

on his death in 1925 this programme became part of his political testament and so, in the party mind, an "inspired" document.

Included in the programme was a scheme for a "Great Northern Port" to be built on the coast some 30 miles east of Tientsin. While nothing has been done to realise this scheme, nor is it at present likely that anything will be done, it has had the unfortunate effect of prejudicing the Chinese Government against a full co-operation in the development of Tientsin to its full possibilities.

#### The Hai Ho Improvement

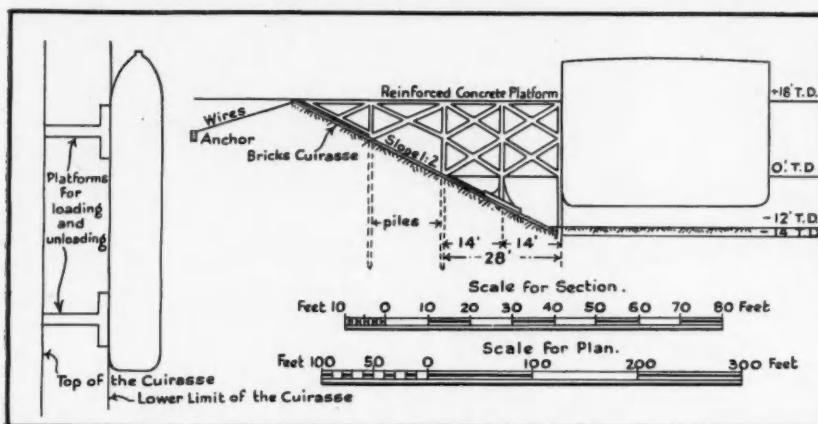
As already mentioned, the outcome of the Boxer troubles was the creation of the Hai Ho Conservancy Commission. This consists of three officials:—

A Consul representing the Consular Body, and thereby the foreign shipping interests.

A Customs representative, usually the Commissioner of Customs for the port. The Chinese Maritime Customs is itself largely officered by foreigners, on account of the foreign loan obligations of China.

The Customs Tao T'ai or Superintendent, a Chinese Customs official, who ranks with the Commissioner.

Also a Treasurer, a prominent foreign resident.



Bundling Scheme consisting of a Cuirasse Decauville for Bank Protection and Platforms for unloading Cargo.

The Commission commenced work in 1902 and proceeded to arrange for the improvement of the river by the best western methods known. Funds were provided by a small tax on cargo, a tax on shipping and a government quota. In recent years the income from these sources has averaged about one million Chinese dollars, but was, of course, less in the early years.

The work may be summarised as follows:—

- The rectification of the channel by cut-offs of the more tortuous bends. The distance from Tientsin to Taku has been shortened by about 20 miles by this means.
- Dredging of shallows and projections for the normalisation of the section.
- Disposal of the dredged material for land raising.
- Control of riparian works.
- Co-operation with the inland authorities in drainage of flood water and the protection of low areas by dykes.

In the later stages of the work, the following further features appear:—

- Dredging of the ocean bar.
- Training walls at the entrance for ice and current control.
- Ice-breaking.
- An international bridge connecting the French Concession with the East Station in the (former) Russian Concession.
- Collaboration with inland authorities in the construction of sluices and regulators for the control or diversion of excess water or silt.

The initial problem was rather simple, namely the reduction of the tortuosity. Seven cuts were made, involving the removal of about 10 million cu. yds. of soil. This phase of the work was completed in 1923. Not only did it straighten the channel, but the reduction of the length and the removal of curves enhanced the tidal flow so that in Tientsin itself there is now a tide of four or five feet range as against an original value of about one foot. Furthermore, the stronger flow of flood and ebb scoured out the entrance bar to a depth of about 7-ft. below datum and greatly improved the draining power of the river. Regular dredging in the harbour was carried on from the beginning and by the end of 1936 nearly sixteen million cubic yards had been removed, about 10 per cent. of which was dumped into the old bayous, but the majority was pumped ashore for land reclamation. As the average level of the Tientsin plain was necessarily about the level of ordinary spring

tide this was a means of protecting important areas from flood damage during excessive tides or upland floods.

The grand total of dredging and excavation done by the Commission up to the end of 1936, not including the Bar work, was about 32 million cubic yards.

The banks of the Hai Ho are protected at berths by simple sheet pile "bundlings," built by the owners of the frontages, but the Conservancy has endeavoured to introduce new methods. The illustrations on the previous page show a method of protecting the sloping shores at a "swinging berth" with concrete blocks strung on wires, thus forming a flexible mattress reaching down to the bed of the river.

#### The Silt Influx Problem

Although the regulation was quite successful it still happened from time to time that great inconvenience was caused to shipping by temporary deposits of silt which partially choked the channel, and these could nearly always be traced to the Hun Ho which enters the Pei Yun Ho (North Grand Canal) some miles above Tientsin. The three monthly freshet season of July, August and September of the Hun Ho may carry 20 million tons of silt and although the material is so fine that at full flood as much as 20 per cent. by weight can be carried in suspension, it is inevitable that much should be deposited. In recent years the conditions have been aggravated by the advance of the so-called delta of the Hun Ho (actually a dyked-in area just above its junction with the Grand Canal) towards Tientsin and by the repairing of the dykes of that river, so that certain escapes which formerly relieved the Hai Ho of its immediate maximum discharge were no longer available. Many schemes were considered and discussed with the other parties concerned, such as diversion of the Hun Ho to a new direct channel to the sea, either north or south, or its diversion to low marshy lands away to the south, all of which failed owing to the immense funds required, land difficulties or political obstruction. Eventually a palliative scheme was put into force which has been a temporary relief. A regulator was built in the channel of the Peiyun Ho just below the mouth of the Hun Ho and a sluice by means of which during spates the discharge of

the Hun Ho could be diverted partially to certain low areas to the east, whence the clear water could be gradually drained into an adjacent river system (The Peitang Ho) or preferably brought back as clear water into the Hai Ho. The operation of this has not been satisfactory owing to inadequate arrangements in connection with the flooded areas, but it has been some relief.

#### The Drainage Problem

The terrible floods which have from time to time injured Tientsin (e.g., in 1939), necessitated relief works and the Commission has participated in the construction of lateral canals and flood walls, but, as this is not a port activity, it is merely mentioned here. Schemes for damming the Hun Ho have long been under consideration.

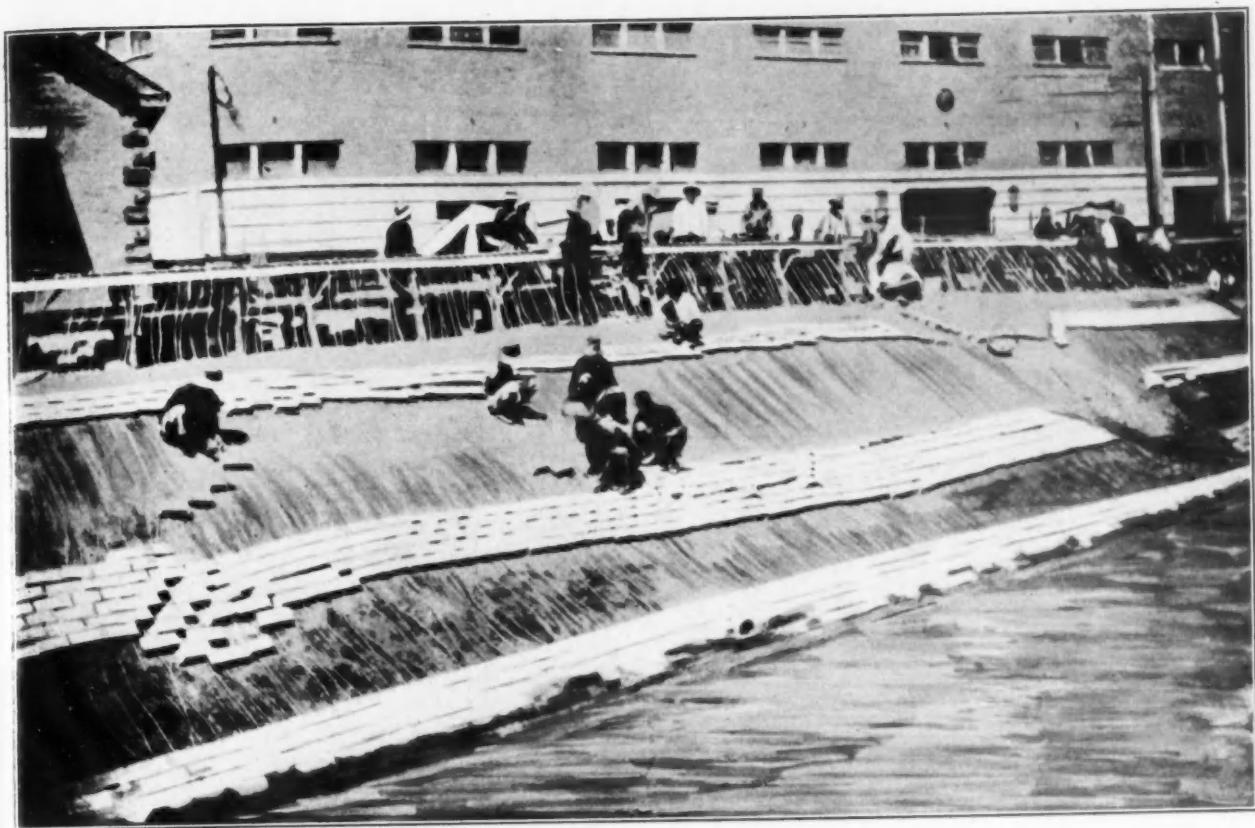
#### The Bar Problem

As has been mentioned the draught conditions on the bar are the real criterion which determines the admission of ships to the port, and an improvement thereon would be of great value even if the ships passing it could only reach Tangku just inside the mouth of the Hai Ho.

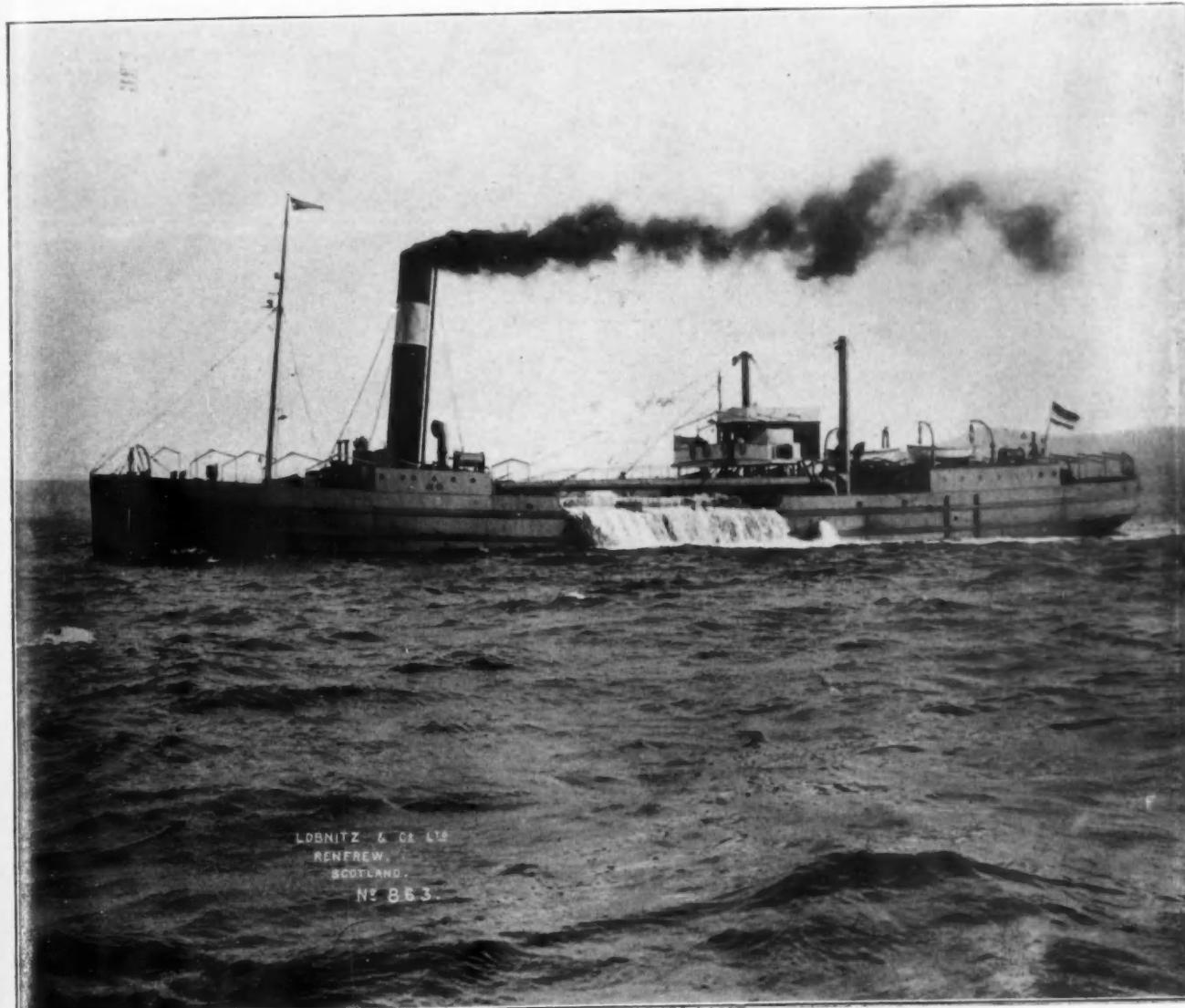
After several years study of the subject, the then Engineer-in-Chief, Mr. T. Pincione, recommended the Commission to acquire a drag suction dredger. He drew up a highly detailed specification for what he considered a suitable vessel and tenders were invited. The contract was placed with Messrs. Lobnitz and the dredger was delivered in 1921. She is 230-ft. long, 42-ft. beam and 16-ft. deep to the main deck. The loaded draught is only 10-ft. and the hopper capacity is 500 cubic metres or say 650 cubic yards. There are two main boilers with a heating surface of 4,300 square feet and three compound engines 16-in. and 37-in. diameter by 24-in. stroke, each rated at 350 h.p., two for propelling and one for pumping. The dredger is of the trailing Fruehling type, and is named "Kwai Li."

The results of this dredging, which has been carried on since the winter of 1921 have not been as good as was hoped, but it has proved possible to maintain a greater depth on the bar than would otherwise have been the case. She cannot work during the ice season, but a characteristic year's work shows 1,604 hours operation and 448 hopper loads discharged. The amount discharged was only 90,000 cubic meters, so that since the hopper is 500 cubic metres the average hopper was only one-

## *The Port of Tientsin*



Construction of the Mattress on the slope above low water line.



Drag Suction Dredger "Kwai Li."

### Port of Tientsin—continued

third full. This however only represents the denser material settled in the hopper, the fines running continuously overboard.

The draught limitation makes it practically impossible to build a hopper of adequate size and the silt is so fine that it will not settle satisfactorily.

An attempt was made in 1926 to train the bar between parallel walls, built on rubble stone between timber cribs, but the timber was unexpectedly attacked by teredo and a special technical committee (of which the writer was chairman) was obliged to recommend their abandonment. A similar wall to exclude wind-driven ice floes from the mouth of the channel has been successfully built.

#### Effects of the Present Hostilities

No particulars are available as to the disturbance to harbour operations which has been caused by the present conflict in China, but there can be little doubt that much of the work has had to be suspended. On the other hand, the arrival of vessels of known draught which is recorded from time to time shows that the river is continuing to serve as a means of access.

#### Trade of Tientsin

Statistics of the seaborne trade are kept and published by the Chinese Maritime Customs. Formerly these were given in "Customs Taels," a silver unit of account approximately equal to one-and-a-half Chinese silver dollars. The Chinese dollar is the same thing as the original American silver dollar, but not having been related to a gold standard it is, or was, only worth its silver content. Since early last year it has fallen below its nominal silver value and is at the moment only worth 4d. Before the war of 1914 for some time it was worth about 1s. 8d., and after the war it rose to several times that value and fell back again slowly. It is thus rather difficult to convey to an English reader the significance of the trade figures, especially when it is considered that the import values include carriage, insurance and freight, whereas the export values are simply "free on board."

Since the purchasing power of the Chinese is in dollars, the values are more stable if reckoned in that currency. With these provisos it may be stated that the imports into Tientsin have been from 1914 inwards about one hundred million dollars annually, of which about two-thirds were imports from abroad. The exports have grown in the same period from about fifty million dollars to over one hundred million dollars (in 1936).

Whereas the imports into Tientsin are of a rather mixed character (petroleum, cigarettes, textile, piece goods, machinery, etc.), the exports are almost wholly agricultural and pastoral products, such as cotton, soya beans, furs, bristles, camel hair, etc. Coal is exported to some extent, although the major source in the neighbourhood, the Kailan coal field, has its own port, Chingwangtao, with much greater facilities for deep draught ships.

#### Shipping

The best year recently recorded for shipping is 1933, when 2,302 vessels arrived, of which 2,061 crossed the bar, and 1,008 reached Tientsin. Of these 1,008, 139 had a draught of over 13-ft. Since the year 1910 the number of ships has about doubled and the proportion over 13-ft. draught has grown considerably until about 1925. The troubles from the Hun Ho silt deposits are reflected, since that date, in a reduction of the mean draught and also in a much greater proportion of ships not going above Tangku. This is perhaps also partly attributable to the traffic conditions, as the hazards of passing would grow with the total number of ships.

#### Harbour Plant

The Hai Ho Commission has the following units of plant:—

- One bar dredger, described as above.
- Four bucket dredgers, one also provided with suction.
- Two spoil pumping plants.
- Two grab dredgers.
- Eleven mud hoppers.
- Six ice-breakers.
- Large sheer legs.
- Sundry small vessels, tugs, launches, boats, etc.

#### Future Plans

In the present complex political situation of Tientsin, it is quite impossible to indicate its future. Schemes exist on paper for wharves of a more modern type near the entrance, but until there has been a very considerable revival of commercial activity and a fairly prolonged period of peace no such schemes can be put into effect. Japanese interests are reputed to have harbour schemes in mind, but it is not clear from whence the capital for such work can come.

### Car Ramp at Larne Harbour

In connection with the improved facilities recently provided by the London, Midland and Scottish Railway Company for the transport of motor cars between Stranraer in Scotland and Larne in Northern Ireland, an electrically operated car ramp has been installed at Larne. It is of unusual interest on account of the numerous devices employed to overcome difficulties and to render the ramp entirely automatic in compensating for rise and fall of tides, rolling and pitching of the vessel, and list resulting from uneven loading. The ramp was constructed and erected at site by Spencer (Melksham), Ltd., of Melksham, Wilts, and was intended to be used in conjunction with the new passenger vessel, the "Princess Victoria," which has accommodation for about eighty cars. The stern of the vessel, with the opening through which the cars are driven, can be seen in Fig. 1.

The ramp is in three sections hinged together, and has a roadway 10-ft. wide. The main section is 70-ft. long, and ends approximately at the quay edge. The next section is 11-ft. long and forms a bridge between the main section and the vessel, its outer end being supported on the deck of the vessel when in use. The final section is 4-ft. long and is tapered to provide an easy rise for the cars from the deck on to the intermediate section of the ramp. During absence of the vessel the end sections are kept raised in a nearly vertical position and held against spring buffers to prevent motion in high winds, and the upper surface of the main section is brought flush with the level of the quay to permit of the passage of traffic across the ramp, including that of railway stock on the 5-ft. 3-in. gauge and 3-ft. gauge tracks shown in the accompanying plan. Under these circumstances, the outer end of the main ramp is supported on two massive bolts, instead of on its lifting ropes, to ensure accuracy of position and to avoid excessive loads on the ropes. The ropes for lifting and lowering the end sections of the ramp are attached to these sections in a manner to ensure that the end of the 11-ft. bridge section shall rest on the ship's deck before the 4-ft. end section reaches the deck, so that car drivers will not be tempted to drive from the vessel on to the ramp before it is ready to receive them. The ramp has been designed to suit a maximum

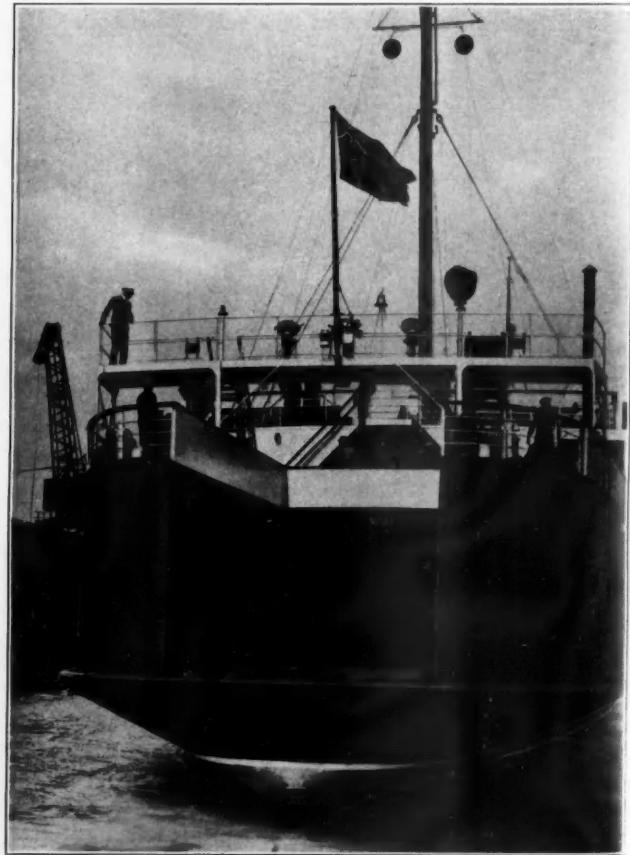


Fig. 1. Stern View of "Princess Victoria."

## Car Ramp at Larne Harbour—continued

difference of water level of 10-ft. due to tides, and a difference in deck level of 1-ft. due to loading. When in its lowest position the ramp has a downward slope of approximately 1 in 10 throughout its whole length. In its highest position the main portion of the ramp has an upward slope of approximately 1 in 20, while the end sections still slope slightly downward.

Special care has been taken to avoid risk of damage to low-built cars when passing over the hinge joints of the ramp during high tide. In this connection the builders of the ramp have patented an arrangement of switches mounted on a moving frame, which they claim will automatically maintain the most favourable angles between the sections of the ramp and respond to any permanent difference of level of the vessel's deck exceeding 2-in. It is not desirable that this automatic gear should respond to momentary motions of the deck due to waves. The switch-operating gear is therefore made to act through a powerful spring which takes up momentary motions, and a double-acting oil dashpot which retards the operation of the switches. To prevent overrunning or hunting of the ramp-adjusting motion, the dashpot has been specially designed to have a quick return to its mid-position. To provide for rolling of the vessel, or list due to uncentral loading, a diagonal hinge has been provided in the 11-ft. section of the ramp. The diagonal joint can be seen in the photograph reproduced in Fig. 2, which shows the end sections of ramp raised to the position in which they are housed when out of use. Close to one side of the raised end ramps may be seen the compensating pulleys. The function of these pulleys is to take up slack rope or pay-out rope to compensate for momentary vertical movements of the deck of the vessel when the end ramp is resting on it.

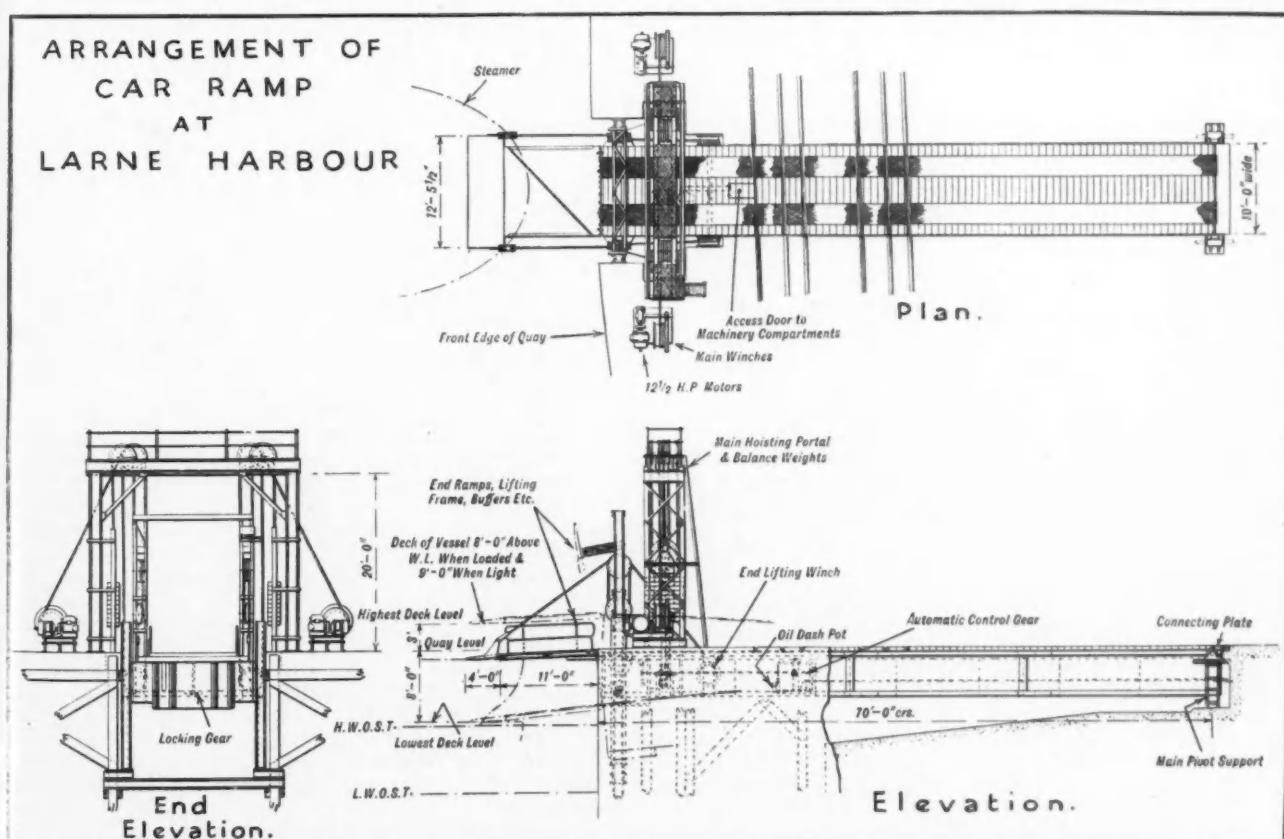
The end of the main ramp, when not supported on the massive bolts previously mentioned, can be raised and lowered on ropes passing over pulleys mounted on the top of the large portal frame seen in Fig. 2. The motion is effected by two winches situated in the machinery houses seen on either side of the portal frame. The winch motors are specially synchronised to ensure lifting or lowering the two sides of the ramp equally. These motors are controlled by manually operated push-buttons when the end sections of the ramp are in a raised position; but as soon as the weight of the end ramps is taken on the deck of the vessel the control is automatically changed over to the patent control gear which brings the main ramp to the correct position to suit the height of the deck of the vessel. Manual control is automatically restored immediately when the end ramps are raised from the deck. To prevent the main lifting ropes becoming unduly slack and getting out of their grooves in the winding barrels, the small pulley seen just above the machinery house in Fig. 2 has been provided. This pulley rests on the main rope, and as soon as the rope sags the pulley falls, operating a switch immediately cutting off current and stopping the motion of the winches.

In addition to the special switches described above, the shunt



Fig. 2. Ramp in raised position.

and main current limit switches usual in this class of work have been fitted. No special difficulties of adjustment have been experienced and the plant has been put into service practically without alteration and to the satisfaction of the purchasers. It may be further noted that the conveyor carrying baggage and mails from the trains in Larne station to the ship's hold, or from the ship to the trains, has been modified to suit the new vessel. This conveyor was also constructed by Spencer (Melksham), Ltd., and has a total length of about 200-ft., including a portable end piece capable of both vertical adjustment to suit height of tide, and lateral adjustment to give various delivery points on the vessel. The range of lateral slewing has been extended.



## Notes of the Month

### Developments at the Port of Venice.

A new warehouse, with an area of 6,000 sq. m., is under construction at the Port of Venice and a grain silo with a capacity of 30,000 tons is projected. The silo will have over 100 lin. m. of quayage available for berthing grain ships.

### Proposed Warehouse at Helsingborg.

A new warehouse is projected at the Port of Helsingborg, Sweden. It will be 58 m. long, 36 m. wide and have a floor area of 2,000 sq. m. The estimated cost of 250,000 kroner will be shared between private sources and the town of Helsingborg.

### Closing of Pier at Greenock.

Notice has been issued that Princes Pier, Greenock, is to be closed to shipping and traffic from 1st April, in order that a complete examination of the structure may be made prior to the execution of extensive repairs which have become urgently necessary.

### Grain Traffic at the Port of Montreal.

The total grain delivered at Montreal for the 1939 season has been 59,413,500 bushels, as compared with 99,315,660 bushels in 1938. Of the total deliveries for 1939, 48,703,074 bushels are shown by the Port Warden's records as having been exported overseas. In 1938, 91,226,148 bushels were exported.

### Belfast Harbour Board Finances.

The annual report and statement of accounts for 1939 presented to the Belfast Harbour Commissioners at their recent annual meeting showed a gross revenue of £341,834, an expenditure of £316,959 and a net surplus of £24,875 after making the customary allocations.

### New Indian Dry Dock.

The Government of Madras has sanctioned an estimate of Rs. 1,80,000 for the construction of a new dry dock at the Port of Cocanada. The cost is to be shared between the Provincial Minor Ports Fund and the Landing and Shipping Fund, Cocanada.

### Port Traffic on the St. Lawrence River.

The tonnage of vessels calling at Montreal during the 1939 season (ocean, coasting and inland navigation) was 7,553,694 net tons, a figure considerably lower than the return for 1938. Sorel, Three Rivers and Quebec also experienced a substantial decline in shipping figures, due in a large measure to the reduction in the movement of grain.

### Capetown Harbour Reclamation Area.

It is announced that the Railways and Harbours Administration of the Union of South Africa has commissioned the services of an "oversea expert" to advise on the lay-out and planning of the newly reclaimed Capetown foreshore. The work on the new basins has now reached a stage at which steps can be taken to demolish the old pier, which will be accomplished at once.

### South African Coastal Lights.

After a lapse of several months during which they have been extinguished or suppressed as a measure of public safety on account of the presence of enemy raiders in Southern waters, all lighthouses, radio beams, fog-horns and similar aids to navigation along the coast of the Union and South West Africa, are functioning as formerly.

### Deepening of the River Yarra.

The main sewer of the City of Melbourne which passes under the River Yarra at Spotswood is to be lowered and duplicated at a cost of £200,000, to be shared between the Government of Victoria, the Melbourne Harbour Trust and the Metropolitan Board of Works. At present, only vessels with a draught of not more than 27-ft. 6-in. can safely pass into the river and the Victoria Dock. The lowering of the sewer will increase the available depth very considerably.

### Indian Foreign Trade.

Considerable expansion is shown in the foreign trade of India during the six months ended 30th September last, according to a report prepared by H.M. Senior Trade Commissioner in India, Burma and Ceylon and issued by the Department of Overseas Trade. The grand total of imports, exports and re-exports amounted to 175 crores of rupees (a crore = £750,000) as against 152 crores for the corresponding period of 1938, an increase of 15 per cent. There were large increments in the imports of rice and sugar. Other increases were in wheat imports, dyes, chemicals and hardware.

### Foreign Trade of South Africa.

During the year ended 31st December, 1939, the British Empire supplied 53.4 per cent. of South Africa's imports and took 55.6 per cent. of the Union's exports. Great Britain was the chief source of supply and the best customer.

### Trondheim as a Port for Transit Goods.

In addition to its normal import and export trade, the Port of Trondheim, it is announced, has taken over the handling of transit goods, not only for Sweden and Finland, but to some extent for other Baltic countries.

### New Wharves at Sydney.

A new wharf, known as No. 3 Circular Quay, has been constructed at Sydney for the Port Jackson and Manly Steamship Company, Ltd., in place of the old No. 2 Wharf, which was narrower and shorter. No. 4 wharf is now being rebuilt for use by the Neutral Bay and Taronga Park ferries.

### New Industrial Harbour at Chataladzi.

The intention of the Turkish Government to construct with British loan capital a new industrial harbour on the Black Sea at Chataladzi is to be proceeded with without delay. Plans have already been prepared by a British firm of engineers and the cost is estimated at £2,500,000.

### New Dredging Plant at the Mersey Docks.

The Mersey Docks and Harbour Board have had under consideration the replacement of certain units of their dredging fleet and the engineer was authorised to invite tenders for the supply of four Priestman grab cranes. A new vessel is also contemplated to replace an existing grab hopper dredger.

### New Quay at Narvik, Norway.

It is reported that a large loading quay is being built by a Swedish iron ore company at Narvik, the Norwegian port from which the Germans obtain their supplies of Swedish ore. It is estimated the new quay, which will take 6 months to complete, will cost approximately £50,000.

### Blyth Harbour Commission.

Under the terms of the Blyth Harbour Commissioners' Temporary Provisions Order 1940, Commissioners elected by coal-owners, shipowners and traders will continue in office for a further period of three years. At the last monthly meeting, Mr. W. Rushforth was elected chairman and Colonel N. I. Wright, deputy chairman of the Commissioners for the ensuing year.

### New Pier at Port of New York.

A new pier (No. 32) has been brought into operation at the Port of New York for the service of the Moore-McCormack Lines. The pier is 1,020-ft. long and 125-ft. wide with a double storey shed superstructure 993-ft. long by 115-ft. wide. The cost of the entire structure was about half-a-million sterling. It was built by the City Department of Docks.

### Improvements at Port of Bergen.

Two portal cranes of 6 tons lifting capacity and costing 300,000 kroner, have recently been ordered by the Bergen Port Authority for installation at the Dokkesjaer Quay where large storage sheds are being erected. The original intention was to equip the quay with 24 cranes and others will doubtless be shortly placed on order.

### Improvement of Jetty at Copenhagen.

There has recently been completed a re-modelling of the Kvæsthusbroen Jetty at Copenhagen used by the United Steamship Company. Formerly the cause of complaint by reason of its narrowness and lack of covered storage space, there is now a more commodious arrangement, with a new shed running the full length of the jetty, enabling cargo to be received in advance of the shipment date.

### Dundee Harbour Appointment.

Mr. Norman Alastair Matheson, Assoc.M.Inst.C.E., has just been appointed assistant harbour engineer at Dundee. Mr. Matheson, who is a native of Aberdeen and received his professional training there, has held harbour engineering appointments under the Isle of Man Harbour Commissioners and the Trustees of the port and harbour of Greenock. Mr. J. Hannay Thompson, the present general manager and engineer of the Port of Dundee, is due to retire under the age limit in July, but has had his period of service extended by twelve months.

## Foreign Trade Zones Law and Regulations\*

By ROBERT STARR ALLYN,

Deputy Commissioner of Docks, New York, U.S.A., and Supervisor of Foreign-Trade Zone.

A recent publication on the subject of Customs History suggests that the word "tariff" had its origin in a tax or "hold up" charge levied upon travellers by a tribe of bandits. While I very much doubt this, it is highly suggestive of a philosophy which naturally and perhaps necessarily goes hand in hand with the administration of a tariff system. Favouritism and irregularity, of course, cannot be tolerated. Room for the exercise of discretion means room for graft. Laws, therefore, must be strictly enforced. The revenue must be protected or someone will get into trouble.

A study of the decisions of the courts in Customs' cases shows that there is an endless field for litigation in the Customs law and regulations. Wherever there is a doubt it is almost always resolved against the importer. He is *prima facie* guilty of under-valuation if the appraiser says so and may be so found even though the court may find the appraiser wrong.

A tariff is a tax, and who likes a tax? If I recall it, taxation was one of the main causes of the revolution and interstate tariffs were important stumbling blocks against and reasons for the final union of the States.

It is not surprising that smuggling while illegal has not always been regarded as bad form. In fact, one can develop considerable sympathy for some of those who have sought to evade the intricacies and letter of tariff law. Free trade advocates have called a protective tariff by all the available "cuss" words.

A tariff may be for revenue only or to regulate commerce, and more recently tariffs are the subject of trade treaties.

What with the Interstate Commerce Commission, the Maritime Commission, the Treasury Department, the Agricultural Department, the Labour Department, the Interior Department, the Department of Justice, etc., I often wonder how a merchant dares to try to do business. Conditions are getting worse and worse as more prohibitive and restrictive laws are passed. Regulations and inspections multiply supposedly to protect the health, safety and interests of the public or parts of the public.

### The Celler Act

The purpose of the Celler Act was, broadly, to promote foreign commerce. I take it that this means in large measure to "cut red tape" and make it easier, quicker and cheaper for merchants to move goods to and from the United States.

The idea of Free Ports has been developed successfully in many foreign countries and it has been studied here for many years.

So far as I can ascertain the Treasury Department openly opposed the idea of the establishment of Free Ports in the United States. At a hearing before a sub-committee of the Committee on Ways and Means of the House of Representatives investigating the matter in 1933, the Acting Commissioner of Customs said: "The Treasury Department has always been opposed to these bills." A study of his reasons unfortunately throws but little light on the subject. I will quote a few of the more striking comments as to the reasons for such opposition.

"It is just because this is unnecessary legislation. You can do all these things now under existing law. It would provide an opportunity for smuggling." He thought it would "cost the Treasury Department a lot of money," but didn't know how much. When asked as to the difference between the practice in foreign free ports and the practice proposed in the United States he said, "I do not know—to my mind, the whole thing is hazy."

In view of this attitude of the Treasury Department it seems unfortunate that that Department should have been given the task of drawing up the rules and regulations as to the supervision of zones, the storage of privileged domestic and privileged foreign merchandise and the manipulation of merchandise as well as the entry into customs territory. In my opinion, the regulations controlling operations of a zone are much more exacting than one would have expected under the terms of the Celler Act. The philosophy of a life-time of civil service cannot be laid aside like a shawl.

### Early Efforts

As early as 1914 the Merchants' Association of New York recommended that provision be made for Free Ports for the advantage of shipping as well as merchants and manufacturers. This followed a referendum to its members and to the press.

Out of 250 answers, 167 were in favour and only 27 against, the balance being neutral. It is especially interesting to note that reference is made in the report to the opposition of bonded warehouses in Bremen to their Free Port for fear of loss of business—but that growing traffic had taken care of them and brought success to all.

In 1918 the Industrial Bureau of the Merchants' Association of New York argued in favour of the installation of a Free Port in New York Harbour. This was opposed by a large warehouse operator on the grounds that there was no large foreign population within reach of New York; factories could not be located in a Free Port; the United States is not a large exporting nation and that the United States produces most of its raw material. Mr. Henry R. Towne, and others, replied to him forcibly.

Mr. D. C. Mills, of the Fur Industry, advocated Federal financing and control of Free Ports.

In 1918 the Chamber of Commerce of New York State approved the idea of Foreign-Trade Zones and in 1926 the Chamber framed a resolution in favour of the so-called Jones Bill, but recommended that authority be vested in a committee and that zones be operated and maintained by the Federal Government and not by public corporations.

Their favourable attitude was reiterated in 1932.

In 1934, strange to say, the Chamber of Commerce reversed its previously favourable stand on recommendation of a committee to which a warehouse representative had been added!

The United States Tariff Commission in 1919 investigated the subject of Free Zones abroad and the possibility of establishing such zones here and reported favourably. They suggested that the term "Neutral Zone" was more properly descriptive. "The function of a free zone is to eliminate, as far as may be, hindrances and delays to commerce and to facilitate foreign trade."

In many places of discussion of the subject will be found statements to the effect that a foreign trade zone or free port is primarily intended to handle goods intended for export or re-export—but there is nothing in the Celler Act which suggests such a limitation. In fact even the counsel for one of the great Warehousemen's Associations stated at their 1938 Convention that "there is nothing in the Foreign-Trade Zone Act that prohibits Foreign-Trade Zone storing non-dutiable merchandise." Nor should there be any such limitation.

### Restrictions and Prohibitions

Some people have queer ideas as to what a Foreign-Trade Zone is intended to be in the United States. We will, therefore, start off with a statement of what it is not. The Celler Act prohibits manufacture and exhibition and states that you may not bring in certain prohibited goods. Aside from that, so far as the law is concerned, you may bring in any other merchandise, domestic or foreign, and mix them, assemble, etc., etc., and store them as long as you wish without payment of duty and without inspection.

A New York lawyer recently told me that we had no right to import merchandise through the Zone as that was not foreign commerce! Some seem to think we should only handle goods for re-export.

The law quite plainly was intended to create areas adjacent to United States ports where goods of all kinds and condition could be brought and stored without bonds indefinitely for examination, cleaning, sorting, assembling, repacking and manipulation of all kinds without being subject to the Customs Laws. This means all of the Customs Laws, including those relating to tariff and inspections.

One gentleman, supposedly familiar with warehousing and Customs regulations, said:

"There is nothing you can do in the Zone that we can't do in our warehouses." Later, he said, "You shouldn't take any goods into the Zone that we can handle in our warehouses."—Can't, can't!!! Well-known warehousemen and their attorneys have said: "We are not opposed to your Zone—we believe in the idea," but, "there isn't a thing in the Zone that we couldn't handle."

Now let us see what the facts are. First, the law was intended, as its title states, "to expedite and encourage Foreign Commerce and for other purposes."

Warehousing is not commerce, but it encourages or discourages commerce depending upon whether it provides safe, convenient and cheap storage. Every bit of customs supervision, every duty, every required inspection, every limit as to time, every control over examination or limit on breaking up packages or bringing in part of a package or lot, every bond required of the owner of goods, discourages commerce, adds to its burden, tends to limit the importation, tends to put commerce in a strait-jacket pressing on its vital organs, its pockets and circulation.

Congress therefore provided for the creation of Zones, sometimes called Free Ports, in order to eliminate the red tape of customs laws and permit merchants to bring in goods to these

\*Address delivered at the Convention of The American Association of Port Authorities at Milwaukee, Wisconsin, October, 1939.

### Foreign Trade Zones Law and Regulations—continued

Zones and store them for such purposes as they wish, except such as are prohibited.

Storage may be followed by inspection, destruction, reclamation, exportation or importation. So far as the law is concerned it is none of the business of the operator of a zone what the owner wants to do with his goods. As the law requires a zone to be operated as a public utility it would appear that a merchant could demand accommodations for his goods subject only to availability of space and ability to safely handle them and subject to control of any manipulation by customs authority.

All kinds of merchandise are admissible under Section 3 of the Celler Act "except such as is prohibited by law" and "without being subject to the Customs laws of the United States." As yet, we do not know what is meant by "prohibited by law."

Section 13, however, gives to the Board the right to exclude from a zone "any goods or process of treatment that in its

The Board has by special order prohibited the bringing in of gold except in fabricated form. Its prohibition against silver has been withdrawn.

Among the special acts of restriction or prohibition are:—

- The Narcotic Drugs Import and Export Act
- The Federal Liquor Control Act
- The Tariff Act of 1930
- The Food and Drugs Act
- The Meat Inspection Amendment
- The Tea Act
- The Import Milk Act
- The Caustic Poison Act
- The Insecticide Act
- The Whaling Treaty Act
- The Insect Pest Act

and treaties with Great Britain, Mexico, Canada and other countries.



Aerial View showing the area of the Foreign-Trade Zone, Staten Island, New York.

judgment is detrimental to the public interest, health or safety."

Apparently until and unless the Celler Act is amended there are no goods excluded from a zone except such as are or may be excluded by order of the Board. Prohibition against entry under the customs law of course does not apply by the very terms of Section 3 of the Celler Act. The intent of the law to provide for neutral non-customs areas is clear.

The Board has in Article 802 of its rules repeated the prohibition of Section 3 of the Act and then proceeds to provide for the regulation of admission of goods, the importation of which into the United States is restricted but not absolutely prohibited, such as certain classes of merchandise as set forth in Chapter X, Customs Regulations of 1931. This would seem to be contrary to the intent of the law to avoid customs regulations. On the other hand, the duty of the Board under Section 9 of the Act to co-operate with the various Federal, State and Municipal agencies would naturally lead the Board to recognise proper national and local standards as to public policy, morals, health and safety. As the Board has the power to exclude it would appear to be entitled to regulate. There is considerable doubt, however, if the power to regulate can be delegated to other government agencies. The responsibility for the decisions by other agencies must therefore rest upon the Board itself.

The administration of these acts comes under the supervision or authority of the Departments of Agriculture, Commerce, Justice, Labour, Post Office, State, and Treasury and involves direct contact with various Bureaus and Divisions, such as:—

- The Customs Bureau
- The U.S. Public Health Service
- The Federal Alcohol Administration
- The Bureau of Narcotics
- The Bureau of Animal Industry
- The Bureau of Entomology and Plant Quarantine
- The Bureau of Plant Industry
- The Division of Seed Investigation.

The Bureau of Immigration is, of course, concerned with immigration which takes place through a Zone.

Importation into the United States is restricted or prohibited of articles of the following categories unless permits are granted by the Government agency having supervision.

- Living disease organisms and vectors
- Animals, insects and cultures infected with human disease
- Viruses, serums, toxins, etc., for the treatment of man or domestic animals
- Narcotic drugs and opium

**Foreign Trade Zones Law and Regulations—continued**

Live ticks, mites, mosquitoes, fleas, flies, bedbugs, lice  
 Honey bee adults  
 Live land or fresh water mollusks  
 Sub-standard foods and drugs  
 Sub-standard tea  
 Insecticides, fungicides, etc.  
 Meat and meat products, including hides and casings  
 Animals and meat from rinderpest infected areas  
 Certain plants, seeds, fruits and vegetables  
 Mongoose, flying foxes, fruit bats, English sparrow, starling and other birds and animals declared to be obnoxious by the Secretary of Agriculture  
 Other wild animals and birds, nests and eggs  
 Baleens and whale-bone, whales and products  
 Certain halibut  
 Pepper shells  
 White phosphorus matches  
 Hides and rags—subject to quarantine  
 Inedible greases  
 Plumage of wild birds, unless for educational or scientific purposes  
 Certain fur seal skins and sea otters skins  
 Liquor in certain prohibited containers  
 Goods made by foreign convict or forced labour  
 Prize fight films  
 Counterfeit coins or securities and plates and dies, etc., for making them  
 Products of country which the President finds has discriminated against the United States  
 Articles which the President finds have been involved in unfair competition or tending to injure or restrain American industry or commerce  
 Books or writings advocating treason, insurrection or threatening bodily harm upon any person in the United States  
 Immoral or obscene books, pictures, etc.  
 Drugs, etc., for preventing conception  
 Lottery tickets and advertisements  
 Articles bearing certain registered trade marks  
 Books protected by United States copyrights and plates for reproducing them and improperly marked books, etc.  
 Goods falsely marked as to country of origin  
 Business cards, etc., similar to the design of coins of any country

In most cases there are exceptions, conditions, permits, certificates, etc., which result not in absolute prohibition but in restriction which in some cases may be overcome. In all these cases it would appear that the articles should be admissible to a Zone at least for the purpose of examination without becoming subject to seizure unless and until prohibited by the Board or by a Celler Act Amendment.

The only items which appear to be absolutely prohibited entry into the United States are:—

Animals and fresh meat from countries where rinderpest or foot and mouth disease have been determined to exist and any by-product of animals affected by anthrax or rinderpest  
 Pepper shells  
 Mongoose, flying foxes, fruit bats, English sparrows, starlings and other birds or animals the Secretary of Agriculture declares injurious  
 Animals and birds the taking of which is forbidden in the country of origin  
 Parrots  
 White phosphorus matches  
 Opium consigned to Chinese subjects  
 Books and other writings advocating treason or insurrection against the United States or threatening bodily harm upon any person in the United States  
 Immoral books and pictures  
 Lottery tickets and advertisements  
 Prize fight films or pictures for public exhibition  
 Goods made by convict or forced labour  
 Articles barred by Presidential proclamation  
 Counterfeit coins and securities and dies and plates for making them  
 Business cards simulating coins

Whether these or other items may be excluded from a zone has yet to be determined. So far as these are excluded from the United States by Customs laws alone it would appear that they might be admitted to a zone unless the zone operator wishes to exclude them for adequate reason.

It is believed that the operator has the right to refuse admission of anything that might lead to trouble, regardless of whether it has been specifically excluded by law or by orders of the Board. It is quite obvious that no zone operator would care to have dangerous or harmful goods in the zone.

**Exclusion by Treasury Regulation.**

Why the Secretary of the Treasury should have felt called upon to issue regulations with definitions, some already in the law and other new ones and purporting to regulate things apparently outside his jurisdiction, is difficult to see.

Of course, as a member of the Board he has a voice in issuing its orders and regulations. Aside from that, his powers as set forth in the Celler Act include only the following six:—

- (1) To supervise and regulate the storage and manipulation of so-called "privileged foreign" merchandise.
- (2) To prescribe rules and regulations for the disposal of such merchandise not sent into customs territory within two years and paying over to the owners of the property any amount which remains after payment of the duty.
- (3) To issue such regulations respecting the identity and the safeguarding of the revenue as he may deem necessary to control the taking into a zone and bringing back into customs territory articles, the growth, product or manufacture of the United States and articles previously imported on which duty has been paid, or which have been admitted free of duty.
- (4) To prescribe regulations with respect to vessels entering or leaving a zone in order to protect the revenue.
- (5) To assign customs officers and guards to protect the revenue and to provide for the admission of foreign merchandise into customs territory.
- (6) To approve all rules and regulations issued by the Board concerning the protection of the revenue.

Notwithstanding these limitations under the law, we find that a strange new class of merchandise, neither foreign nor domestic, has been created by definition which excludes from a zone all foreign merchandise in customs territory unless it is duty free or unless all duties and penalties have been paid.

The Secretary also requires a special form of bond for double the estimated duties on privileged foreign merchandise—much more expensive than an ordinary importer's bond.

Section 3 of the law provides for the liquidation of duties on goods when unladen in a zone and for the payment of the duties upon importation within two years. In case the goods are not imported within two years the Government shall dispose of the merchandise under rules to be laid down by the Secretary of the Treasury. Out of the proceeds the duties are to be paid and the remainder, if any, shall be delivered to the owners of the property. In spite of this provision of law, the rules set up require the consignee to file a bond in a specified form in double the amount of the estimated duties, which sum shall be paid whether the articles have been wholly consumed or destroyed, exported, sent into customs territory or otherwise disposed of. This bond being entirely new and the risk undermined the rate is, of course, high. Thus far no one has taken advantage of this so-called "privilege."

The rules for maintaining the identity of "privileged domestic" merchandise are very strict. It may be kept only in places secured by customs locks or seals and may be withdrawn only under the immediate supervision of customs officers.

The philosophy of the Customs service is, of course, by law—protect the revenue at all costs. "Never give a sucker a break" might have been originated by a student of customs law cases.

It is my idea that the Celler Act was intended to provide a place as free as possible from all the intricacies of customs law and regulations and I believe that that was the basic intent of the law.

One of the important advantages of the Zone is that goods may be stored there indefinitely and manipulated and still retain the right to receive the favourable import railroad rates in force to interior ports.

**Construction Work**

Construction work in the Zone, of course, is a continuous operation. New work and reconstruction is going on all the time. The Board has therefore required the United States District Engineer to pass upon all plans within the scope of the grant. No "deviation" from the original grant can be made without the consent of the Board. This is understood to mean a material change of plan. Deviation means change of direction or purpose. We find nothing in the law or rules to require the Board's approval of plans for additional buildings or other facilities unless they are to be constructed by outsiders.

Our original plans contemplated two large seven-storey buildings for storage and manipulation. Under conditions thus far existing it has seemed unwise as yet to construct such buildings. The Board has accordingly deferred this requirement.

During the past year a great deal of work has been done looking to improvements and additions to the facilities of the Zone. One project contemplated a secondary water supply and

### Foreign Trade Zones Law and Regulations—continued

pump system intended to reduce the fire insurance rates. This was in addition to the most modern sprinkler alarm systems, City fire alarm connections and distributed fire extinguishers. Combined with this water tank and pump system was to be a battery of tanks for the storage of vegetable and fish oils and the necessary pump and delivery lines with ship and rail connections. An enlarged gate house or customs and operator's office building was also designed. Demands for the storage of valuable goods and for the control of temperature, etc., led to the design of what was called a general utility building. All of these have been approved by the United States District Engineer, but were bitterly opposed by local warehouse interests. Notwithstanding these objectors the City appropriated some \$389,000 for this and other work to be done as W.P.A. projects. On account of the protests of the warehouse interests a public hearing was held in Washington by the Foreign-Trade Zones Board. As a result, the City was sustained in every respect.

#### Warehouse Opposition

Some of the warehousemen of New York in 1938 sought to secure some sort of control of operation of the New York Zone. No definite proposal was made, but previous experience with some of them did not seem to warrant repetition. Threats were made of litigation and pressure was exerted against the Board in Washington to interfere with the operation of the contract with the New York Foreign Trade Zone Operators, Inc., on the ground that it was a lease, but the Board ruled that the contract did not violate Section 17 of the Celler Act on which the main complaint was based.



View of Upper Deck of Pier No. 16. The bales contain carpets and the wooden cases contain rolls of linoleum.

Our warehouse opponents contend that they are in favour of a Foreign-Trade Zone, but their ideas of the limitations of a zone are such as to remind one of the party who said she thought the speaker was a wonderful orator but she hoped he would choke.

In this connection, I would call your attention to the proceedings of the American Warehousemen's Association last February. Resolutions opposing the use of Federal funds for the development of foreign trade zones and suggesting amendments to the Celler Act which would restrict them, in effect, to re-export trade and require control of rates and prevent competition with existing public warehouses were adopted without a single word of discussion although committees had listened to the opponents of foreign trade zones.

In view of the repeated statements that a Foreign-Trade Zone had no advantages not possessed by other public warehouses, it is highly instructive to note a report made by the chairman of a committee on Bonded Warehouses of the American Warehousemen's Association. In his report he appealed for an amendment to the present customs regulations so that "merchandise may be cleaned, sorted, repacked and otherwise changed in condition in order to equal the advantages or privileges on certain commodities now apparently enjoyed by Foreign-Trade Zones."

He specifically had "in mind the bringing into a Class 3 bonded warehouse with Class 8 privileges, unlabelled meat products such as corned beef, roast beef and dog food, for the application is said warehouse of the labels of the buyer as consignee," an operation which has been developed in our zone to the great advantage of the importer and to his customer merchants throughout the United States and foreign countries.

The chairman also recommended amendments to the customs laws to require that duty to be paid only "on the quantity and weight as goods are delivered." This is exactly one of the present advantages of the use of a Foreign-Trade Zone. "This in marked contrast to the facts with respect to customs bonded warehouses, in which duty is assessed upon quantities and weights at the time of storage, affords material benefit to certain types of imported merchandise. Liquors, in bulk, for example,

the gauge of which changes considerably in storage, are subjected in a Foreign-Trade Zone to considerably less duty when delivered from the zone than from a customs bonded warehouse. A similar state of facts exists in the case of Brazil nuts which lose weight while in storage. It is likewise alleged that no duty has to be paid on spoiled goods in a zone, whereas such duty is assessed in customs bonded warehouses."

He would have the laws amended so that bonded warehouses could have the advantages of Foreign-Trade Zones. The idea is excellent, but entirely overlooks the obligations which the grantee of a zone privileges has. If the Treasury Department was opposed to the present Act what will be its attitude toward granting the same privileges to Customs Bonded Warehouses?

Of course, there is bound to be some competition. Brazil nuts can be stored in any warehouse but without the Foreign-Trade Zone advantages. We believe our rates are fair—not so high as the highest—not so low as the lowest available in the port. In a sense, therefore, we are competitors of houses which can store nuts but under less advantageous conditions.

Counsel for the Warehousemen's Association vigorously champions his client but becomes over zealous when he pretends to analyse the contract between the City and the New York Foreign-Trade Zone Operators, Inc., as to the relative share of proceeds. He admits that his analysis is "not with a great deal of accuracy." I would say "not with much accuracy." To say that the "operator" gets \$75,000 after deducting operating expenses and before dividing with the City I would say was a pretty substantial error. Perhaps in his scale \$75,000 extra is only a "little inaccuracy." Is that a measure of the accuracy of his other comments?

Among other statements quite misleading, to use the most polite term, reported in the Warehousemen's Year Book, is one supposedly quoting a gentleman from New York to the effect that 4,000 barrels of vegetable oil were taken from his warehouse to Zone No. 1. Our records show only one shipment to the Zone of China Wood Oil of about 300 barrels for remarking and 307 pounds of garlic oil stored, both in 1937. No other vegetable oil came in in 1937 or 1938 and none of this is believed to have come from the warehouse in question.

#### Operation

If a zone is to be any comfort to an importer he should be allowed to bring in anything he likes. In fact, the grantee has no declared right to enquire why the applicant wants to go to the Zone or what he proposes to do. He may not know. Part of his cargo may be transhipped, part imported.

It would certainly greatly hamper the importer or merchant if he were prevented from landing or storing in a zone duty free goods. If he had two lots on a ship, one duty free and one dutiable, he would have to make two stops for his cargo—one outside the Zone and one inside. Sometimes the classification is uncertain or unknown. The Zone is a safe place to leave the goods and find out their condition before attempting entry.

It is ridiculous to think that operation of a zone can be restricted to the handling of goods for transhipment or re-export. There is nothing whatever in the law to suggest such a limitation. It is inconceivable that anyone, any city or private corporation would seek for the grant of a Foreign-Trade Zone right excluding the handling of domestic and duty free goods and prohibiting importation of goods through a zone unless the Federal Government would undertake to shoulder the expense.

There have been suggestions that Foreign-Trade Zones should be operated by the Federal Government and there is considerable to be said in favour of such operation.

The law requires that the grantee shall pay for the additional cost of Customs supervision and the rules require that it shall also pay for the supervision of construction by the United States Engineer. These have cost about \$25,000 per year for the New York Zone. There is also an additional cost for flood lighting the land and water areas, the estimated cost of which is over \$1,000 per year. Maintaining the intangible barrier, thus far experimental, has cost about \$6,000 per year.

The Zone, thus, starts off with a non-productive expense of over \$32,000. To these must be added the cost of office accommodations, telephone, light and heat for the Customs officials. In view of the fact that the customs duties collected in 1938 exceeded \$345,000 it seems not unreasonable for the Federal Government to bear all of the Customs expenses.

The railroads, with the exception of the Baltimore and Ohio, have appeared cold to the possibilities of the Zone. It is interesting to note, however, that much of the goods leaving the Zone have gone by various railroads, steamship companies and private lighters. In one month fifty-seven lighter loads passed into or through the Zone. The largest number of lighters belonging to any one company was thirteen.

Of course, many of the operations in the zone have been experimental. There has not been an operation in the Zone but what was entirely justified. Nor, on the other hand, has there been any major operation but that has met with difficult and complicated questions of segregation and inspection caused

## Foreign Trade Zones Law and Regulations—continued

by the very stringent rules under which we are obliged to work and in spite of whole-hearted effort on the part of the local Customs officials. Congress requires that the "revenue must be protected." One has only to read the discussions of the courts in tariff cases to realise the necessary basic philosophy of the watch dogs of the Treasury. The importer is nearly always wrong in the first instance, but he has a good chance of success in the courts! He will receive every possible help from us, however. He will also find the Customs officers on duty at the Zone ready and anxious to assist wherever possible within the law and regulations.

We mention these things because they are important elements in the whole scope of the Foreign-Trade Zone operations. They affect us here and necessarily will affect other zones.

Right now there are stored in Foreign-Trade Zone No. 1 several thousand pieces of what are supposed to be "Household Goods" or "Removals" of people who have not yet been able to reach the United States, may never come or who may actually move to South America if they can escape the bondage in which they are held. These goods, if claimed by the owner, may be duty free. Where else could they store their possessions indefinitely without bond and repack, receive or destroy parts?

## The Grant

The "grant," a copy of which is attached, is a harmless-looking document, but is packed with potential headaches. It reaches back to the days of optimistic surveys, plans and hopes and obligates the grantee to do many things which subsequent experience may question.

Fortunately, the Board and the Customs Collectors have shown a disposition to treat the subject reasonably, but the law, rules and the grant have furnished fuel for the fires of wrath from able and highly-paid antagonistic counsel or lobbyists in Washington, New York and elsewhere.

It is obvious that in the early stages of a zone it was impossible to make enough money to pay the fixed charges and yet it has been insisted by some that our rates must be "compensatory," whatever that means. We have endeavoured to fix rates comparable with those in force in the vicinity for accommodations as nearly as possible like ours. Unfortunately there is a wide difference of opinion as to what is a reasonable rate. There is by no means a uniformity of rates. We have let it be known that we will be glad to consider modification of any rate which is unfair, provided all the cards be laid on the table. Naturally we cannot accept the mere word of a single interest.

The rules require a zone to be operated as a public utility with reasonable rates. The Board has ruled that we must file our rates within three days, but the warehousemen insist that we should give thirty days' notice although they reserve the right to change theirs at will. The reasons are obvious.

## Zone No. 1 Operations

In spite of opposition and other difficulties our business has grown as follows from 1937 to 1938:

	1937	1938
Tonnage Received	10,586	38,895
Import Values	\$1,174,000	\$5,752,000
Kinds of Commodities	52	145
Lots of Goods	92	1,285
Countries of Origin	21	51
Export Values	\$60,000	\$156,000
Countries of Destination	12	30
Gross Income	\$8,200	\$69,000
Customs Revenue	\$30,000	\$345,000

It is estimated that an average of approximately 24,000 man hours labour per month was provided in the last seven months of 1938 in zone operations, including manipulation and handling. The first five months of 1939 show a similar average employment with an average pay roll of approximately \$19,000 per month. These figures are exclusive of work on construction contracts and maintenance of City property. The exact amount of ships pay rolls is unknown.

## Zone No. 2.

Foreign-Trade Zone No. 2, which was opened in Mobile, Alabama, July 21st, 1938, did very little, if any business. The Dock Authority of the State was shortly afterwards reorganised and the new State administration pledged to economy petitioned for revocation of the grant. The situation bears all the earmarks of a change of political set-up. Mobile seemed a favourable spot for a zone especially as the State controls practically all the docks facilities of the City and would not be hampered by conflicts or disputes between private and zone interests, but, so far as we can learn, practically no effort was made to try out the Zone. The cost of Customs supervision and the complications facing the operator under the Federal rules and regulations were doubtless factors leading to the decision which resulted in a revocation of the grant, April 14th, 1939.

## Conclusion

If the warehousemen would only "put their own houses in order" there would be but little, if any, occasion for fearing the competition of Foreign-Trade Zone No. 1 or any other zone.

A careful study of the law, the present rules and regulations as to the obligations and control of grantees and the little blue book called "FTZ No. 15," Uniform System of Accounts, Records, and Reports for use by Foreign-Trade Zone Grantees, will, I think, convince the unprejudiced that the grantee has more to worry about than the warehousemen.

I have the following general suggestions to offer:

- (1) That Zone grantees be given an opportunity to be heard before any order of exclusion is issued.
- (2) That the requirement for a bond for privileged foreign goods be eliminated.
- (3) That the local collector of customs be allowed to use his discretion as to the segregation of privileged domestic goods.
- (4) That goods when offered for entry be valued as of the date of entry rather than the date of exportation from the country of origin.
- (5) That drawback be allowed on foreign origin goods when placed in a zone from customs territory.
- (6) That the Federal Government should bear the cost of customs supervision when the duties collected exceed the cost.

I think you will understand from the foregoing that I feel that the Secretary of Commerce rather than the Secretary of the Treasury should have supervision of Foreign-Trade Zones. The protection of the revenue should be subordinated to the promotion of commerce which was the purpose of the law. We could then have a different philosophy of control which is much needed in the making and interpretation of rules and regulations.

Please understand that my criticism and suggestions are personal and not official. Neither should you conclude from my silence on any point that the City of New York has waived its right to object to rules and practices which may be detrimental to the City's interest. The interpretations of the law or intent by me or by the Secretary of Commerce are, of course, not binding upon the Board or upon the grantee or the public.

FOREIGN TRADE-ZONES BOARD.  
WASHINGTON.

## Grant to Establish, Operate and Maintain a Foreign-Trade Zone at Stapleton, Staten Island, New York.

WHEREAS, by an Act of Congress approved June 18th, 1934, an Act "To provide for the establishment, operation, and maintenance of foreign-trade zones in ports of entry of the United States, to expedite and encourage foreign commerce, and for other purposes" (48 Stat, 998; U.S.C.A. Title 19, s 81a-81u), hereinafter referred to as "the Act," the Foreign-Trade Zones Board, hereinafter referred to as "the Board," is authorised and empowered to grant to corporations the privilege of establishing, operating, and maintaining foreign-trade zones in or adjacent to ports of entry under the jurisdiction of the United States; and

WHEREAS, the City of New York, a public corporation, organised and existing under the laws of the State of New York, having its office and principal place of business in the City of New York, in the State of New York, hereinafter referred to as "the Grantee," has made application in due and proper form to the Board for the establishment, operation and maintenance of a foreign-trade zone, designated on the records of the Board as Zone No. One, at Stapleton, Staten Island, New York, as shown on the Map accompanying said application marked Exhibit No. 10; and

WHEREAS, notice of said application has been given and published, and full opportunity has been afforded all interested parties to be heard; and,

WHEREAS, the Board has found the proposed plans and location are suitable for the accomplishment of the purposes of a foreign-trade zone under the Act and that the facilities and appurtenances which in said application it is proposed to provide are sufficient;

NOW, THEREFORE, the Board, subject to the provisions, conditions, and restrictions of the Act and all of the rules and regulations made thereunder, hereby grants to the Grantee the privilege of establishing, operating and maintaining a foreign-trade zone, designated on the records of the Board as Zone No. One, at the specific location mentioned above and more particularly described on the map accompanying said application, marked Exhibit No. 10, said grant being subject to the provisions, conditions, and restrictions of the Act and of all rules and regulations made thereunder, to the same extent as though the same were fully set forth herein, and also to the following express conditions and limitations, to wit:

## Foreign Trade Zones Law and Regulations (continued)

The Grantee shall make no deviation from the maps, plans, specifications, drawings, and blue prints, accompanying the said application and marked Exhibits Numbers 1 to 13, inclusive, before or after completion of the structures or work involved, unless modification of such maps, plans, specifications, drawings, and blue prints, has previously been submitted to and has received the approval of the Board.

The work of construction under this grant shall commence within thirty days from the date of the grant; said work shall be diligently prosecuted to completion and the work of construction shall be completed and operation of the zone shall be commenced by the Grantee within nine months from the date of this grant. The Grantee shall notify the United States District Engineer in whose district the zone is located of the date upon which work will begin and as far in advance thereof as the District Engineer may reasonably specify, and shall notify him promptly in writing of any suspension of construction for a period of more than one week, and of its resumption and completion.

The Grantee shall fully comply with the provisions of the laws for the protection and preservation of the navigable waters of the United States, and shall secure the authorisations and approvals of works in navigable waters of the United States required by such laws. The grant herein made shall not be construed as conveying such approval.

The Grantee shall allow officers and employees of the United States of America free and unrestricted access in, to, and throughout said zone in the performance of their official duties.

This grant shall not be construed to relieve the Grantee from liability for injury or damage to the person or property of others occasioned by the construction, operation, or maintenance of said zone, and in no event shall the United States of America be liable therefore.

IN WITNESS WHEREOF, the Foreign-Trade Zones Board has caused its name to be signed and its seal to be affixed hereto by its Chairman and Executive Officer, Daniel C. Roper, at Washington, D.C., this thirtieth day of January, 1936, pursuant to an order of the Board issued on January twenty-ninth, 1936.

FOREIGN-TRADE ZONES BOARD,

## Correspondence

To the Editor of "The Dock and Harbour Authority"  
Sir,—

The article entitled "A New Trailing Suction Dredger," appearing on page 59 of the January, 1940, issue of your valued publication, has been noted with interest by those connected with the design and operation of the seagoing hopper dredge "Chester Harding," recently constructed for the Corps of Engineers, U.S. Army. The dimensions and power installations are stated correctly but the inferences and questions in the article are believed to be worthy of comment and reply.

The suction arrangement was not influenced by the design of the "Pierre Lefort," but is the practice followed, with but few exceptions, by the Corps of Engineers for many years. Of 26 hopper dredges built prior to the "Chester Harding" and now in service, 18 have drag pipes on both sides; the last dredges built with a center well drag were constructed in 1924, and one of these is now being constructed to the double side-drag type.

From six months' operation of the "Chester Harding," it can be stated that it meets fully all expectations. The "Ambrose Channel" type of drag head, developed by the Corps of Engineers some 40 years ago, continues to prove the most effective tool for the purpose. Without disparaging the Fruehling drag, which has advantages under some conditions, it can be stated that it is not adapted for the service on which the "Chester Harding" and similar dredges are engaged.

Contrary to the statement that the drag pipes would disturb the steering of the vessel, the dredge handles remarkably well with the drags down. This occasions no surprise here, as all dredges of this type have good manoeuverability.

Diesel engines have been proven equally as satisfactory as steam for dredge installations. Diesel drive was adapted in the case of the "Chester Harding" because of the lower first cost. It should not be inferred from this that all future dredges of the U.S. Engineer Department will be powered with diesel engines. The merits of steam engines for certain purposes are fully recognized and the prime movers will be selected after due consideration of adaptability and cost.

Very truly yours,

(signed) H. B. VAUGHAN, Jr.,

Major, Corps of Engineers,

War Department, United States Engineer Office,

February 16, 1940.

Philadelphia, Pa.

## Book Review

**Precision Echo Sounding and Surveying.** D. H. Macmillan. Large quarto, 87 pp. Henry Hughes and Son, London, 1940. 12s. 6d.

Readers of the "Dock and Harbour Authority" are well acquainted with Commander Macmillan's excellent articles on hydrography and the use of the echo sounder and will be very glad to have the matter of same collected together in a convenient form and supplemented by other matter. While the author has concentrated on one particular type of echo sounder, and the book is, in the main, a handbook for the use of this particular type, it will nevertheless be found of general interest.

As a practical navigator the author has given special attention to the question of sounding in shoal water, i.e., in depths within which vessels may ground and he shows very clearly how the new methods are of practical advantage. A short preliminary section on the hydrographic requirements of a first class harbour indicates the problems that are raised and shows how unsatisfactory the uses of rods, wires, drags and other mechanical methods are, even apart from their slowness and expense.

Echo sounding gear is next described, followed by a discussion of the factors affecting accuracy. The installation of the gear is then considered, the author strongly advocating a beamy launch 35 to 50 feet long with a Kitchen rudder control. The survey duties and disposition of the crew are then detailed, after which the drawing office work for the development of the records into a chart is considered. The plotting of the ship's track is then studied, including the author's ingenious system of "graph" plotting, by means of which the use of station pointers is avoided when working on standard areas. The speed of the survey in relation to the scale of plotting is next investigated.

Special applications of echo sounding to cable-laying, wreck positions, fish shoals and tide recording are then touched upon. The remainder of the book deals with maintenance, some technical considerations and a fairly detailed description of the echo sounder and its adjustments.

The book is well produced, with over a hundred illustrations, and is strongly bound in a canvas cover, and will probably become quite popular as it is written in a very practical manner. Future editions might well include some reference to other types of echo sounders, together with some indication of the author's reasons for preferring the particular type which he so well describes.

## Publications Received

**The Chamber of Shipping of the United Kingdom Annual Report for 1939-40** makes the following observations regarding pilotage and dock and harbour dues:—

**Pilotage.**—The Chamber has continued to give close attention to pilotage matters during the year. Applications for increased rates in some districts were resisted or modified and strong exception was taken by the industry to a proposal to introduce compulsory pilotage in the Tyne district. Upon the outbreak of war the Admiralty were vested with powers to regulate pilotage conditions, including the adoption of compulsory pilotage where deemed necessary for safety. In order to reduce the disturbance thus caused, particularly to coastwise shipping, the Chamber, in conjunction with the Admiralty, appointed a small visiting committee to discuss the position with the various Commanders-in-Chief with a view to the relaxation of the obligations and additional costs placed upon shipowners where examination showed that they were not essential for defence purposes or safe navigation. Several applications for increases in pilotage rates which had been promoted since the war are under examination.

**Dock and Harbour Dues.**—There was little variation in the level of dock and harbour dues prior to the outbreak of hostilities. Since then applications by the dock and harbour authorities for increases in dues have received the attention of the Chamber through the Traders' Co-ordinating Committee on Dock Charges. Appropriate action has been taken where necessary, but on the whole it was found that the increases sought were not reasonable.

**The Creep of Concrete under Load.**—The Department of Scientific and Industrial Research has issued a further paper (Building Research Technical Paper No. 21, published H.M. Stationery Office, price 1s. net) in the series of studies on reinforced concrete, which deals with an investigation at the Building Research Station on the creep or flow of concrete under load. Much of the work described was done in co-operation with the Reinforced Concrete Association. The subject was first considered in Building Research Technical Paper No. 12, published in 1930. Since that time, the scope of the investigation, which originally related to the longitudinal movements resulting from loading in compression, has been widened to include creep in pure tension, lateral movements under compression and the effect of creep on the deformation and ultimate strength of reinforced concrete beams.

## The Port of Harburg

The aerial photograph of the Port of Harburg, taken by the Royal Air Force on reconnaissance over Germany and released for publication by the Ministry of Information has already appeared in the daily press and is an excellent illustration of what can be done in this way. As a matter of interest to the readers of the "Dock and Harbour Authority" we reproduce this photograph in juxtaposition with the only plan available to us of this harbour, so that the two may be compared. Certain changes have been made on the site since the plan was drawn, but it will be noticed how much detail the aerial view provides. On the original photograph this is still more marked as the process of reproduction for printing inevitably causes a certain amount of blurring. Some of the features are also distorted from a pure plan-view by perspective effects. This is not wholly disadvantageous, as foreshortened views of walls, chimneys, etc., may enable them to be more easily recognized than would be the case on the plan.

The official photograph provides a key to the annotation as follows:—

- A. Drawbridge.
- B. Dock (meaning open basin).
- C. Barges.
- D. Barge Building Yard.
- E. Railway Turntable.
- F. Fuel Oil Tanks.
- G. Lock Gates.
- H. Tall Chimney.
- I. Shelter Trenches.
- J. Timber.
- K. Fuel Pipe Lines.
- L. Lighters.
- M. Cold Storage Buildings.

These same letters have been inserted on the plan as well as can be done, and the position of the Elbe is also shown.

Harburg is situated on the right bank of the Elbe some six miles south of Hamburg, and is quite a separate port, although in close connection with Hamburg. At this place the Elbe is very wide and is split into two main channels which are separated by several large islands. A canal connecting to the River Seve, joins the Elbe at Harburg.

It will be observed that, contrary to the practice at Hamburg, this is a locked harbour. The tidal range in the Elbe is such that the use of locked basins has always been a matter of controversy and the tendency in latter times has been towards open basins.

### Changes in Port Personnel.

At the recent annual meeting of the Chamber of Shipping of the United Kingdom, Sir Philip Haldin was installed as President of the Chamber and Lord Rotherwick as Vice-President.

Mr. S. Bell, Quartermaster to the Gateshead Corporation and Superintendent Stevedore for the Tyne-Tees Steam Shipping Company, has retired after 22 years' service.

Mr. Alexander M. Hamilton has been elected a member of the Belfast Harbour Board in place of the Rt. Hon. Sir R. Dawson Bates, Bart., D.L., M.P., who did not seek re-election on the completion of his term of office.

After 36 years' service with the Port of Bristol Authority engineering department, Mr. Charles Perry has gone into retirement. The occasion was marked by a farewell gathering at which an illuminated address was presented to Mr. Perry.



Photograph taken by the Royal Air Force on reconnaissance over Germany.



Plan of the Port of Harburg.

# The Port of Buenos Aires

## Project of a Port for Coastal Traffic and a Riverside Station\*

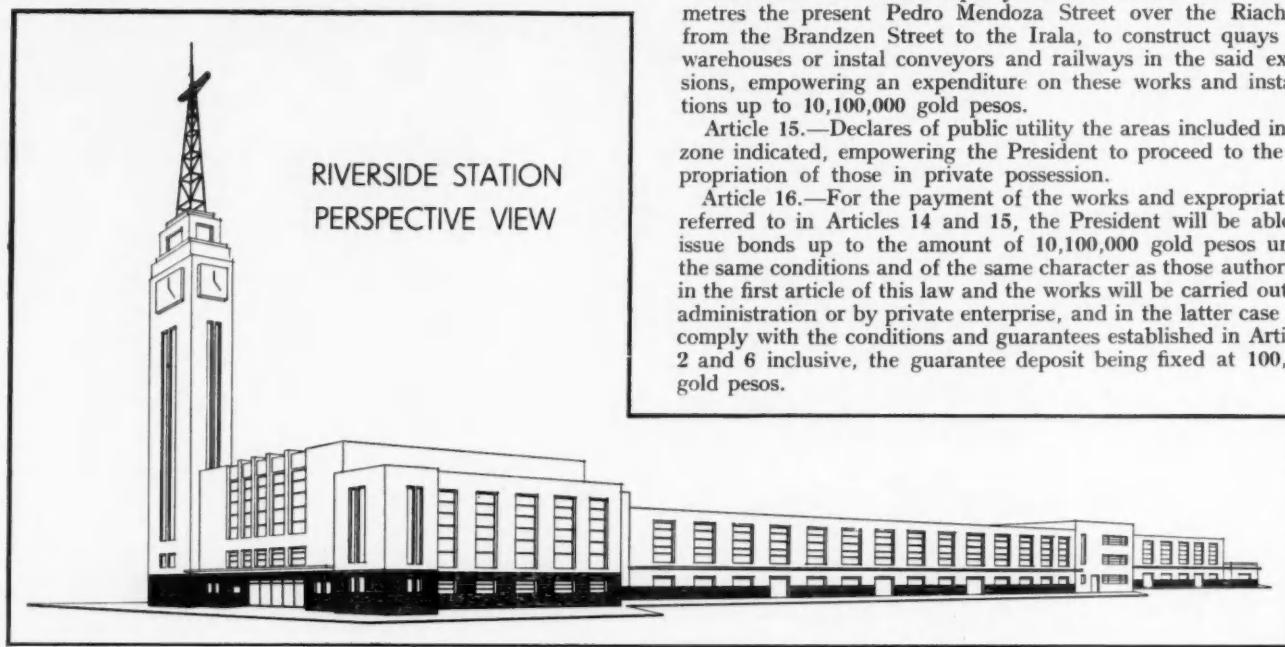
(Translated from the Spanish).

(Concluded from page 109)

### PORT EXPLOITATION OF THE RIACHUELO.

#### Relation and Analysis of Antecedents

The difficulties in the way of exploiting the Riachuelo as part of the port area were manifest more than 40 years ago. In this zone of the port, in default of proper accommodation, there are grouped customs arrangements which compel a special handling of the merchandise and produce which goes there, since it is impossible to concentrate services which are not as rapid as those of haulage and storage.



For fruits or foreign products similar to home products, when they are considered to be in transit, permission is given for their storage in private sheds, a circumstance which may encourage the clandestine entry of goods subject to duty—the action is possible seeing that the Customs authorities of the capital has admitted its occurrence—and except that special methods have been adopted, difficulties so insoluble exist that strict control is not practicable. This would be avoided with storage in bonded warehouses, whereby there is a guarantee that there leaves the country the same or similar products, as allowed by law. Besides guaranteeing the payment of Customs dues, they represent an important element for rapid service which to-day is impracticable by reason of the lack of plant and lay-out.

The situation is not new, since it was considered in the year 1908 in the National Senate Chamber when it was proposed to include in law No. 5,944, Articles 14, 15 and 16; on which occasion, Senator Virasor declared:

"It is necessary, Mr. President, to see what passes over the frontage of the Riachuelo in order to realise how indispensable it is that these works be carried out and at the same time steps should be taken for the expropriation by which the President can forthwith establish there his customs warehouses. Actually, these are in the hands of private firms who find at hand the barges to load and discharge and receive immediately and directly the articles and merchandise of these craft. They may have only a clerk, who holds the designation and functions of a Customs clerk and who is paid by the proprietor of the warehouses.

"In face of these facts, the Senate will take account of all the irregularities and inexactitudes to which this state of affairs gives rise. Undoubtedly, there may be very respectable firms as proprietors of these warehouses and, they may even guarantee that they will have no irregularities, but that does not imply that they cannot happen, however much the Customs offi-

cers wish to avoid it, all of which, in fact, results in a loss of Customs dues."

The Ministers of Lands and Public Works of that period and other national legislators on their part have frequently emphasised the importance of the subject and its urgency, since the works required would be paid for very promptly by means of the adjusted receipts. Accordingly, in the Law No. 5944, the National Chamber of Senators embodied the Articles mentioned, the text of which is as follows:

Article 14.—Authorises equally the President to widen to 100 metres the present Pedro Mendoza Street over the Riachuelo from the Brandzen Street to the Irala, to construct quays and warehouses or instal conveyors and railways in the said extensions, empowering an expenditure on these works and installations up to 10,100,000 gold pesos.

Article 15.—Declares of public utility the areas included in the zone indicated, empowering the President to proceed to the expropriation of those in private possession.

Article 16.—For the payment of the works and expropriations referred to in Articles 14 and 15, the President will be able to issue bonds up to the amount of 10,100,000 gold pesos under the same conditions and of the same character as those authorised in the first article of this law and the works will be carried out by administration or by private enterprise, and in the latter case will comply with the conditions and guarantees established in Articles 2 and 6 inclusive, the guarantee deposit being fixed at 100,000 gold pesos.

These provisions, designed to create a genuine port in the Riachuelo, such as I have indicated, were adopted whole heartedly by the National Senate; they form part of the works programme formulated in the scheme which consigned the respective plan, prepared in the year 1905, to technical sub-division and that, in accordance with the parliamentary discussion, was accepted by the Minister of Public Works from that date. Therefrom, it can be appreciated that the works proposed on the left-hand side in the vicinity of the mouth of the Riachuelo, that is, over the side of the city for a width of 100 metres and a length of 2,600 metres, are precisely those established by Law No. 5944 and that, as indicated, they involve an authorised outlay of nearly 23,000,000 pesos, national money, corresponding to the grant estimated in 1908 at nearly 12,000,000 pesos national money.

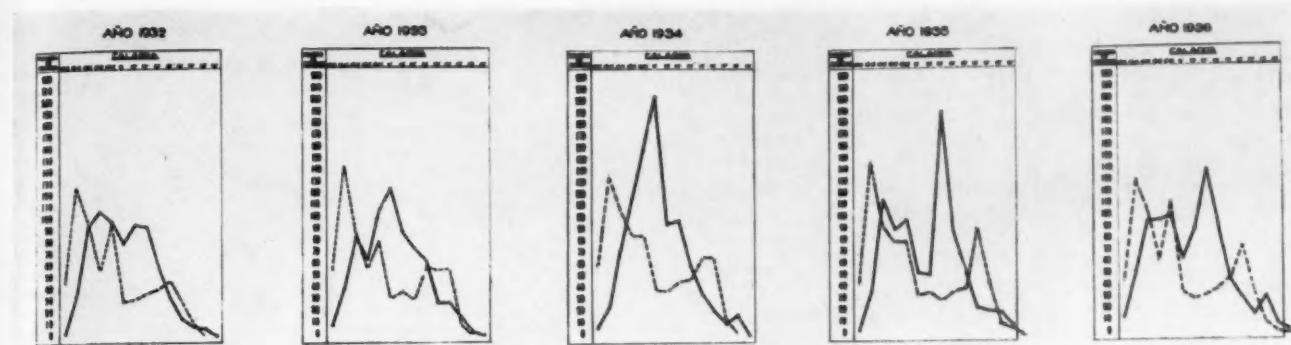
In the right-hand margin, within a zone 150 metres wide over a development of 1,200 metres, larger works were contemplated at a cost nearly the same as the preceding, but not having been able to justify these, they have not been taken into account. Their outline, which can be considered in the plan to which I have referred, is technically objectionable, not only on account of the disconnection of the grouping, but also for the arrangement of the installations, which would have caused serious inconvenience in exploitation.

As can be appreciated in that connection, works were contemplated very closely approximating to the present scheme, involving more than 47,000,000 pesos, national money, for remedying a state of affairs which has existed unaltered for more than 30 years and now has even more accentuated features. It must be borne in mind that at that date the problem to be solved comprised the activities which were developed practically only in the lower zone of the Riachuelo, but that to-day this zone has extended and intensified its operations in such a way that the foresight of the public authority of that period was justified and continues to justify itself.

The works having been carried out (I refer to those of the first and second stages) there still remain to be considered all the needs of the Port of Buenos Aires in respect of the major

\*Lecture delivered by Señor ERNESTO BALDASSARI, Director General of Navigation and Ports, on April 26th, 1939, under the auspices of the Institute of Liberal Studies of the Argentine Society of Engineers.

## Port of Buenos Aires—continued



South Channel. Annual records of registered tonnage, arrivals and departures, according to number of vessels. Full lines: arrivals. Dotted lines: departures.

and minor coastal service and the river passenger service and their concentration in a form convenient for Customs control.

Necessarily, the Riachuelo will remain always as a waterway, supplying the communication which permits of the collection within the port zone properly so called, of the products for exportation and facilitating therein the appropriate operations.

This point of view is of first importance for the land and river traffic which enters this zone; it suffices to cite the following values to place the facts in relief. There passes across the Riachuelo by its different bridges, a daily procession of almost 25,500 vehicles, a figure which on some days reaches exceptional heights; 700 trains daily, which only cease running for two periods of almost 30 minutes in the hours of early morning and which transport annually 60,000,000 passengers, besides goods. The mean annual movement for the waterway is around 1,000,000 tons in the zone of the Alsina Bridge.

As therefore at the present moment the values of the river traffic of the Riachuelo with respect to those of land traffic are relatively small and do not correspond to the use of the waterway envisaged by the project, while by creating a water traffic requiring high clearance, concurrent problems are originated, it is logical to think that the land traffic which links the Federal Capital with the Province of Buenos Aires will become even more intense, above all if it is considered that the Federal Capital does not allow of the establishment of industries which require large areas of land so that convenient locations for them are sought in the province.

#### Solution of the Problem for the River Elbe

An analogous case—in principle but not in magnitude, since the factors are infinitely greater—is presented by the River Elbe, upstream of the Port of Hamburg, analysed briefly below in sequence as the problem was considered and solved.

The River Elbe, the navigation of which extends beyond Czechoslovakia, connects the important central, northern and eastern regions of Germany by means of an important fluvial net of 6,200 kilometres (constituted by the main stream, tributaries and canals) to the Port of Hamburg. Within this net are located 132 internal ports, among which are Magdeburg, Dresden, Prague, Breslau and others, which serve important industrial areas, the products of which for the most part are transported to Hamburg, because 45 per cent. of the merchandise and produce which moves between that port and its zone of influence is conveyed by water.

In the port zone properly so called, only those industries are allowed to take root which are connected with its exploitation and, in consequence, there have been created industrial zones upstream of the great bridges built in a series across the Elbe; I have just indicated that these are dedicated to activities of the most varied description: naval industries, chemicals, metallurgy and iron and steel works, metal refineries, manipulation of rubber, structural materials, oils, aniline dyes, etc., the import-

ance of which is manifest from the significant fact that on both banks there are 167 establishments occupying more than 150 hectares.

During the year 1937 there entered or left the Port of Hamburg from or to the Elbe and its tributaries, 33,300 vessels carrying 9,009,301 tons of merchandise and products.

Values so extraordinary added to those of the remaining movement of the port represent an intense traffic in shipping, railways and vehicles. It was no easy task therefore to give a solution satisfactory to each interest represented, on which depended the future of the port, which is situated so that the connection of the two banks, 300 metres apart, had to be achieved by bridges of the fixed type resulting in limited accessibility for large ships.

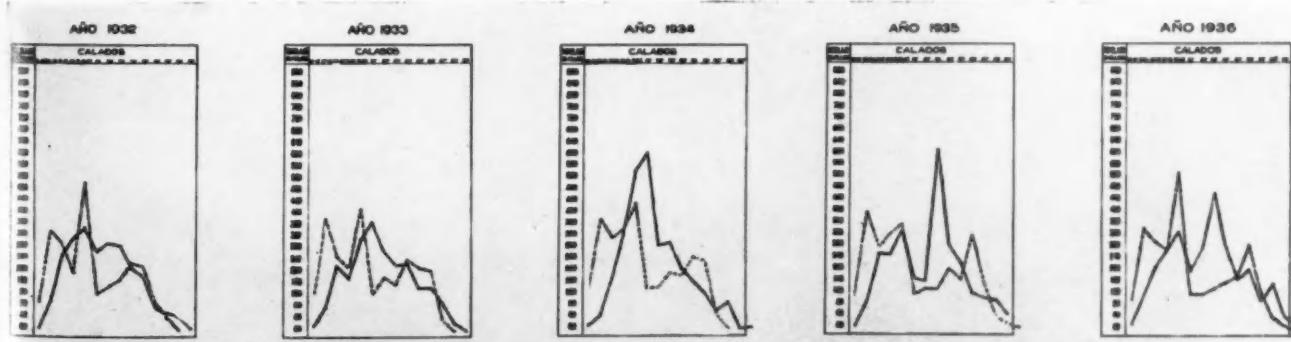
From the year 1854 to 1857, the problem was studied in its many aspects, analysing the different solutions to a minute degree. Following nearly 15 years of labour, that is to say from 1868 to 1872, there was completed the construction of the first fixed bridge across the Elbe at some 3 kilometres above the mouth of the River Alster and in 1880 a second fixed bridge of similar design 200 metres upstream of the first.

This circumstance did not prevent, after some fifty years of experience, a return to a fresh study of the problem, since it was unavoidably necessary to enlarge the port and to consider the possibility of removing the fixed bridges to positions more upstream. The idea not only did not succeed, but on the contrary in 1926 a third bridge was constructed adjacent to the first and immediately upstream, which in the view of the technical authorities of the Port of Hamburg formed for seagoing ships the definite limit of the River Elbe above Hamburg. Only 10 out of 87 existing bridges in the port zone are movable.

The headroom for navigation to be left beneath the bridges was considered very carefully because there was no desire to have recourse to extensive slopes and there had to be conformity with the different levels of water recorded; as a result of these considerations and yet foreseeing the inconvenience of exceptional levels of relative long duration, it was established at 5.50 metres above ordinary high water, which is satisfactory for barges of 1,000 tons displacement, of 70 to 80 metres length and 9 to 10 metres beam, such as are found in important harbours.

As regards our problem it can be said that the interests involved are not such as to necessitate a hard and fast determination, but a complete analysis with allowance for the future, for which studies are justifiable which assign definite characteristics, accordingly, since our constant economical and industrial evolution from day to day finds new values which modify previous estimates.

In the case of the Riachuelo, if, parallel with the normal development of land traffic, ship navigation is intensified, there will be produced a super-position of interests which will involve troublesome solutions, since it is not always possible,



South Channel. Annual records of registered tonnage, arrivals and departures, according to draught. Full lines: arrivals. Dotted lines: departures.

## Port of Buenos Aires—continued

however much it may be desired, to regulate services by interrupting activities at times when both forms of traffic are developing their maximum effect.

For the realisation of the scheme, works of high cost with special features will have to be executed, in order that one traffic shall not affect adversely another in any respect, and in that case it will be obligatory not only to limit the number of such works but also to scrutinise their location by reason of the centralisation of the traffic, since the requirements to be met cannot be the same on both sides.

## Expropriations

The zone to be expropriated represents an area of 146,450.98 sq. metres for the first stage and 95,000 sq. metres for the second stage. Inasmuch as the remainder of the port requirements have been planned on land definitely public, to the same extent there will be no difficulty to the State in dealing with future situations which arise.

There exists a zone already ear-marked for the roadway bridge which necessarily must be appropriated, either now *per se* or simultaneously with that of the projected port works, in a manner that ought to be opportunely considered.

Similar ideas have guided the expropriation for the concentration warehouse, since it is a question of works beyond the limits of the port jurisdiction.

## Finance

(NOTE.—This section is greatly condensed).

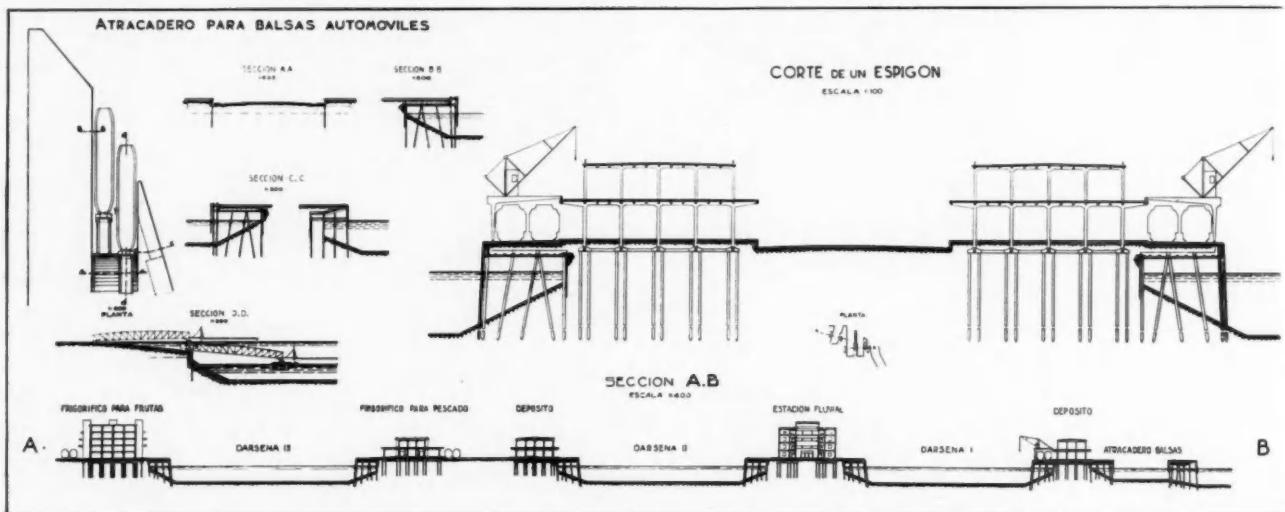
The cost of the first and second stages of the works outlined is as follows:—

		\$
Expropriation, First Stage	...	11,559,499.00
Second Stage	...	8,936,000.00
Indemnification 20%	...	4,099,099.80
		24,594,598.80
Works, First Stage	...	12,457,414.00
Second Stage	...	11,902,000.00
Contingencies and Supervision 10%	...	2,435,941.40
		26,795,355.40
Total		<u><u>\$ 51,389,954.20</u></u>

No account taken of dredging since it will be carried out with the present plant within the annual estimates.

## Conclusions

The commercial movement of the Port of Buenos Aires during the year 1936, which can be considered the normal, assigns as values corresponding to the area within this project, 4,258,793 tons, of which 2,954,776 tons correspond to the Riachuelo in all its zones; that is, it is practically 30 per cent. of the total which takes place throughout the port jurisdiction.



Quays and Berths—Sections.

In the Chamber of Senators, during the consideration of the works plan for the Riachuelo, it was established that the expropriations requiring decision and which occasioned a greater outlay were indispensable, and that in that case, as in this, they represented 50 per cent. more or less of the corresponding investment.

As I have indicated, Law No. 5944 already authorises the expropriation of 141,920 sq. metres and sanctions for the purpose, 12,000,000 pesos, national money, that is, practically what I propose for the first stage.

The value of the expropriation which has been adopted for each of the stages has been obtained in detail from the valuation recently made by the General Administration of Territorial Contribution as equitable compensation, plus 20 per cent.

This form of requisition, it is logical to suppose will offer no serious difficulties, since it will reasonably compensate for the values of premises and land affected by the expropriation which to-day are sensibly reduced by reason of the economic depression in this zone of the municipality, a solution that furthermore places in evidence that commercially the present moment is most suitable. Furthermore, with the exception of a few buildings, some of them industrial, in general the property affected is antiquated and in an indifferent state of preservation.

Yet again, it must not be forgotten that there exist economic reasons against the development of building in the zone, since it forms part of the lower levels of the Riachuelo, which are so much congested that everything is problematical, especially the foundations required, which represent a considerable outlay for the owner, the drainage, the paving, precautions against flooding; all indicates fundamentally that there can be no future trend towards a total transformation; the actual state of things will endure, if not be aggravated, since whatever solution is attempted, it will represent external outlay which will prevent its adoption; it is not out of place to indicate that even hygienic reasons compel it.

Analysing more closely this same aspect for the quinquennium 1932-36, it can be seen that the proportion is maintained. To alter the existing regimen of port operations, by changing the outlines of part of the docks, would bias the flow in the same degree as the increase, since for reasons of usage, the movement would not be entirely displaced towards the New Port.

The commercial value is such that compared with the seven principal ports of the Republic, it is placed directly after the port of Rosario, which justifies any steps tending to provide it with an adequate port layout.

In conclusion, the coastal service and passenger station project envisages in an ample and concrete form the necessities of navigation and of commerce for coastwise traffic, as also for the transit of merchandise and passengers to or from adjacent ports; it will afford installations adequate for the storage of goods in transit and cargoes, even when they may be naturally perishable; it will dispose of a greater extension of quayage, which will avoid a second row; it will centralise in one point the disembarkation of passengers, accelerate the operations of loading and unloading by means of working facilities and better circulation in the port zone and will permit of the simplification in an efficient form of Customs routine.

With it there will be no attempt to secure a wider outlook for future development than is justifiable, but to give services and to satisfy important and evident necessities and in some degree it will carry a responsibility since only those services will be recompensed which effectively lend themselves to the statutory arrangements.

There is contemplated a series of services and activities, the inauguration of which has been delayed. To satisfy the needs means, in point of fact, regarding them in face of realities which call for a solution, but so that the revised character of the needs and essential matters ought to be faced in advance. Delay not only means enhanced cost, but a reduction in fiscal revenue.

(concluded on page 150)

## The Use of Oil Engine Power for Dock and Harbour Work

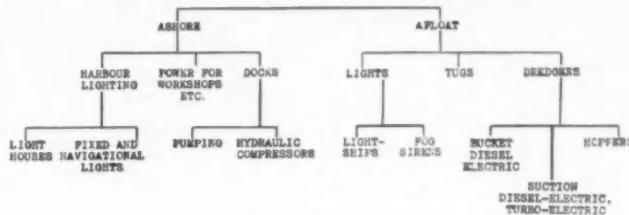
By A. C. HARDY, B.Sc., A.M.Inst.N.A.

From the oil engine manufacturers' point of view, the possible field of application for his products covered by the requirements of dock and harbour authorities, is a very large one. It is possible that, due to lack of exact understanding of the conditions under which power plants in dock and harbour work are required to operate, he may be over-optimistic. Even if that is so, belief in the potentialities of the internal combustion engine is justified because of the characteristics which it possesses, all of which appear to commend oil engine power to the most arduous of duties. In assessing the future of the oil engine to lighthouse and harbour work, the manufacturer is thinking in terms of the difficult problems which confront him from time to time in supplying machinery to run in power plants at very high altitudes; in building engines for mining purposes in various parts of the world; in designing power units for the operation of pipe lines where, for example, the engine must run upon the crude fuel which actually comes through the pipe line, and furthermore must operate under conditions of tropical heat. If then, these things are possible, surely the most storm-swept of lighthouses, the most isolated of lightships, the most hardly-worked of tugs, the highest capacity dredge, present no difficulty from an operational point of view even if the installation may on occasion be difficult. Except for specific purposes, it would appear that most dock and harbour authorities to-day should be interested in standard oil engine production of four and two-cycle type, of upwards of 800 h.p. per shaft. Literally dozens of standard makes within this power range exist. Of these "dozens" it is true that perhaps not more than half are really first-class jobs. Even so, the choice is a wide one as regards price, conditions of delivery, characteristics of operation, weight and size. Such engines under normal circumstances, tend gradually to decrease in price as they increase in simplicity. Their fuel consumption is as low as ever it was, an average figure being 0.38 lbs. of oil per horse power developed per hour. The wide range of design suggests an equally wide range of fuels which can be employed. This, of course, is an important matter in engines operating in exposed or inaccessible stations, as well as, indeed, in lightships. The old argument against the use of oil engines, that only the most skilled labour could operate them no longer holds. If proof of this were needed, we have only to look at the increasing number of internal combustion units being employed in fishing fleets. Given therefore this proven reliability, assuming a reasonable first cost, and the ready availability of spare parts, coupled with a simplicity of design, there seems to be no reason why the oil engine should not tackle successfully the multifarious jobs which dock and harbour authorities may require it to perform.

### Use by Trinity House

Perhaps the finest testimonial in this respect that the oil engine manufacturer has had in recent years, is the increasing extent to

which Trinity House is employing oil engines, in lighthouses, lightships, pilot cutters and lighthouse tenders. With these thoughts in mind, therefore, it is interesting to examine the scope of potential oil engine application. Many of the duties set forth in the family tree herewith are already satisfactorily filled by oil engines, and experience exists to indicate that further application of a like nature should take place in the future. On the other hand, there are some duties which still remain virgin territory for the oil engine. It is interesting to split the field into two main sections, the Duties Ashore and Duties Afloat and then to examine the various sub-sections in which these can be divided, mentioning specific examples where these appear to be useful. Duties which the oil engine can perform in shore establishments seem to fall under three heads—that of *lighting* in the widest sense, that of *power* for workshops and that of *docks*.



### Lighting Duties

As regards the first-named, the use of the oil engine for lighthouses, ranges all the way from supplying the light itself to operating compressors for the fog siren. The use of the oil engine for supplying the main light has so far been usually confined to isolated or exposed stations. In this respect it enables the lighthouse to be completely independent of outside sources. If it is situated on a rock, access to which is difficult during certain states of weather, then fuelling problems are reduced to a minimum by virtue of the liquid nature of the fuel and the fact that it can easily be pumped from the tender to the tank on the rock. In cases like this, the lighthouse then becomes a complete self-contained Diesel-electric power plant, with a generator equipment supplying all duties from that of the main lantern itself down to, if need be, cooking in the men's galley. Such an arrangement is the ideal not only of the Diesel engine manufacturer, but also of the electrician. It brings in its wake many problems associated with Diesel-electric propulsion of ships, for many difficult conditions associated with the latter, of which load fluctuation is but one, would be attached to the former. Actually there are few such equipments in service to-day. This is partly due to the fact that so many powerful lights still run on the oil or gas, rather than on the electrical system. At the present time, therefore, the principal use for the oil engine on rock stations or indeed in lighthouses of any type, concerns the supply of lighting where this is not taken from main supply and for operating compressors or for generators for radio sets.

### Signalling Uses

Another way in which the oil engine has been employed complementary to the uses mentioned above, is in radio beacon lighthouses. Swedish stations are particularly mentioned in this respect and it is noteworthy that the "Bolinder," an engine very popular in the fishing fleet of that country, has found favour.

As an example, we can think of the Kullen lighthouse, situated on a rocky promontory where the Sound opens out into the Kattegat. It is the most highly elevated lighthouse, being about 225-ft. above the sea. Formerly it was equipped with kerosene lighting, consisting of a triple flame Lux burner of half-a-million Hefner units, giving a range of 24 nautical miles. At the foot of the hill on which the lighthouse stands was a fog siren compressed air operated, with one of the two compressors driven by a two-cylinder 16-20 h.p. Bolinder engine, and the other by a petrol engine. In 1937 the lighthouse was converted to electric lighting and equipped as a radio beacon. The old fog signalling plant was further replaced by an electric diaphragm siren. This is just one indication of the present tendency to displace the older methods by modern electrically and Diesel-electrically supplied equipment. When the lighthouse was electrified, the power was increased from the half-million to no less than two-and-a-half million Hefner units, an air-cooled metal filament lamp of 1,000 watts being used for the lighting. The electric diaphragm sender for the fog siren consumes 6,000 watts and the radio beacon installation uses another 100 watts. A special power plant has been installed at the foot of the lighthouse for



A Modern Trinity House Lightvessel using oil engines for all power requirements.

### Use of Oil Engine Power for Dock and Harbour Work—continued

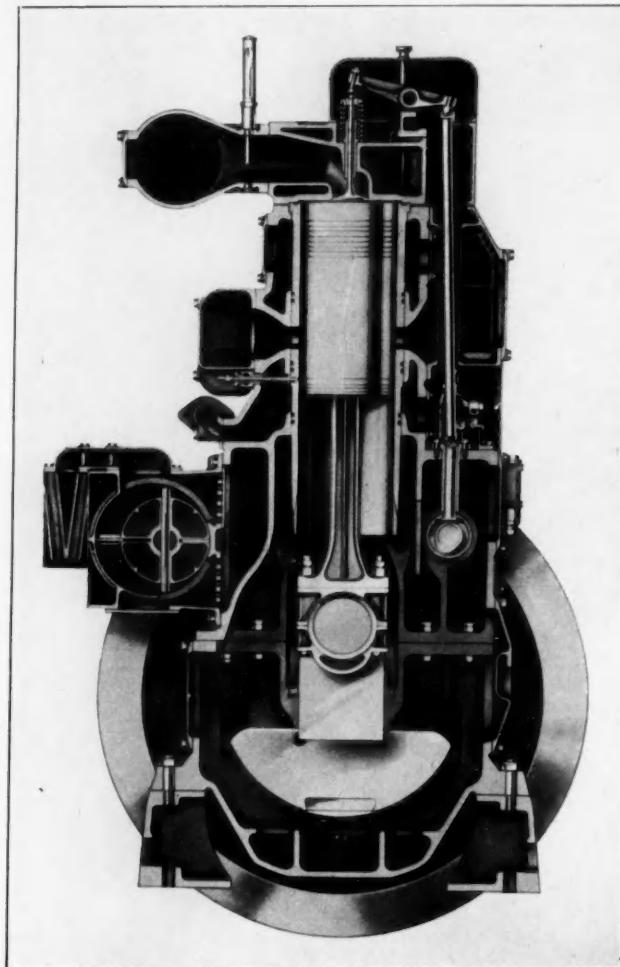
supplying the current required. This comprises two 50 h.p. Bolinder lightweight engines, each of 1,000 revolutions, direct connected to D.C. generators of 30 kilowatts and 110-volt. One of the sets is used as a stand-by for emergency.

As another interesting example, mention may be made of the 2-cylinder 50 h.p. engine of Bolinder type installed in Horta lighthouse in the Azores. Attention is further, and more

that authority may determine. If, on the other hand, he chooses a Diesel-generator set, then his production costs are mainly governed by the price of fuel oil and this under normal circumstances, is a figure which does not fluctuate greatly. Even floating docks take their power from shore stations, but in this case the Diesel generator has an even stronger reason for being used. If the dock generates all its own power, then it is completely independent of shore supplies and furthermore, can be towed, if necessary, and moved from place to place. There are examples of floating docks with their own power station arranged in the wall of the dock using Diesel-generated power of upwards of 1,000 b.h.p. The Diesel power plant in this case can also supply all the electricity needed for the workshop, for lighting the dock, for heating the crews' quarters if any, and for cooking. Note then in summing up, that the uses of the Diesel engine in dock and harbour work ashore, usually concern a possible rivalry with shore supply but show their advantages in their self-containedness and in their complete independence. In none of the cases mentioned has the Diesel engine been exploited to anything like the full extent of its capabilities. It has achieved, in fact, rather more success in the floating plant and this perhaps, for obvious reasons.

Few, if any lightships are being built to-day which do not include a Diesel generator equipment in some part of their hull. The maximum requirements are taken by the big Diesel electric vessels for the U.S. Bureau of Lighthouses. This Authority has always insisted on the need of self-propulsion for its lightships and consequently in vessels of 108-ft. 9-in. on water line by 30-ft. beam moulded by 15-ft. depth at side amidships and 630 tons displacement, we find a total of four 75 kilowatt Diesel generator sets, each direct connected to 112 b.h.p. Winton Diesel of 450 revolutions. The main electric motor itself develops 350 h.p. and is direct coupled to the screw. The Diesel generator equipment supplies the whole of the electrical requirements of the ship, including that of the lights. French lightships similarly equipped, although with less oil-engine power, have been constructed during the last few years. That vessel built for the Dyck light at Dunkerque, is equipped with two airless injection Sulzer two-cycle Diesels each of 60 h.p. In this case only 100 h.p. is required for propulsion, the vessel being 140-ft. by 22-ft. 9-in. by 16-ft. 9-in. with a displacement of 525 tons.

Recent Trinity House lightships, acknowledged as among the finest of their kind in the world, do not employ electricity for propulsion, but they use it for a number of other important purposes; for example, the fog signal machinery comprises a pair of Gardner 38 h.p. engines each direct coupled to a  $5\frac{1}{2}$  kilowatt D.C. generator, and indirectly to a compressor. The electric current for general lighting and the navigational lights is supplied from  $5\frac{1}{2}$  kilowatt generators direct coupled to Gardner  $9\frac{1}{2}$  h.p. cold-starting airless injection heavy oil engines. Built by the Caledon and Shipbuilding Company, Dundee, for the order of the Dundee Harbour Trust, the lightship "Abertay" which is 106-ft. 10-in. overall by 26-ft. by 14-ft. has three main generating sets, comprising Paxman-Ricardo two-cylinder 20 h.p. Diesels, each driving a 9 kilowatt, 110-volt Crompton-Parkinson generator. There are also two Paxman-Ricardo



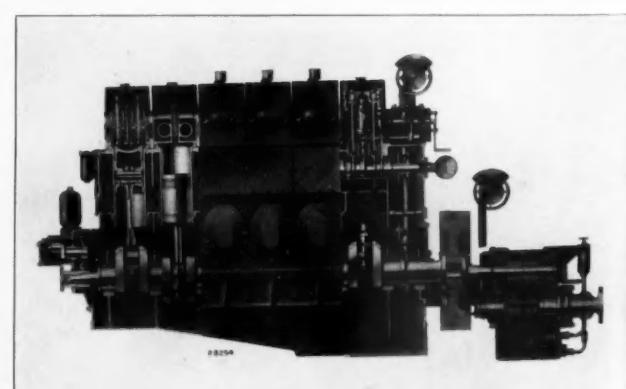
A 2-Cycle Single-Acting Engine with blower scavange. The type is suitable for generator or compression work in lightships and lighthouses and is made as a reversing or non-reversing type.

topically, drawn to the need for small Diesel engines in lighthouses by the recent request for tenders for the Ports and Lighthouses Administration of the Ministry of Communications, Egypt for an engine and water pump for the Shedwan lighthouse in the Red Sea.

#### Dock Work

Now these examples all entail the use of fairly small units. Even at this late stage in the development of the oil engine proper, they may be regarded, however, as a minimum of the demands which are likely to be placed upon the oil engine manufacturer as the technique of Diesel electricity advances. As regards fixed and navigational lights shown in the tree, electricity is also of paramount importance. Here, too, in cases where the main supply is not employed Diesel generator sets can with advantage be used. Workshops attached to docks and shore stations of various kinds are beginning to find a need for oil engines of upwards of 100 h.p. which can be used in two ways, either a slow-running engine can have belting attached to its flywheel, and thence to a line of shafting with a belt-drive of various tools, or a Diesel-generator equipment can be employed which will drive the whole of the workshop equipment electrically. The latter may be rather more expensive, but is equally efficient. The absence of long lines of shafting with belts and clutches, too, is something to be mentioned.

Both floating and graving docks are works which offer considerable scope for the use of heavy oil engines. The requirements here are mainly in connection with pumping plant and with compressors and here, too, the choice is one between the use of shore power and home-generated current. Naturally it is governed by the price at which town main current is retailed and the Dock Authority which surrenders itself to the local authority is subject to the vagaries of price which



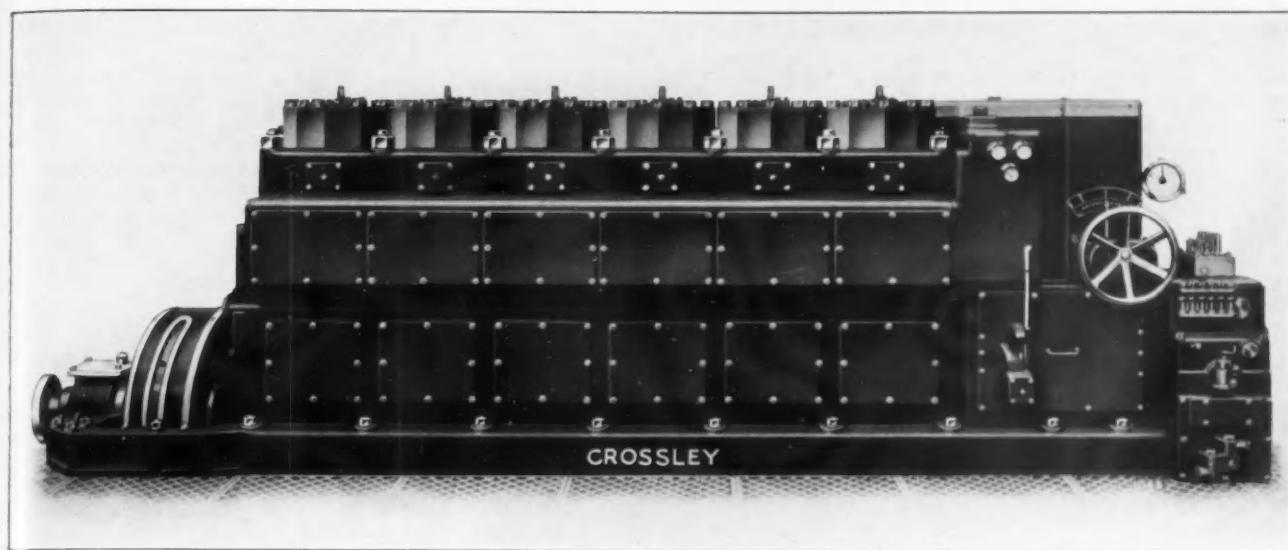
A 4-Cycle Single-Acting Engine with reduction reverse gear. This type is made in powers up to about 500 h.p., and is suited to the propulsion of pilot cutters, hoppers and the like.

three-cylinder 33 b.h.p. Diesels, each driving a vertical air compressor for the compressed air for the fog signalling apparatus.

#### Dredging Plant

Floating mobile equipment presents an even larger market for the oil engine at the present moment, and engines of high power are employed, tugs towing hopper barges for example, can use 2 or 4-cycle engines on anything up to 1,000 h.p.

## Use of Oil Engine Power for Dock and Harbour Work—continued



A 2-Cycle all British Scavenge Pump Engine made as a reversing or non-reversing type up to about 800 h.p. for propulsion or generator or compressor operation.

direct or indirect coupled to a single screw. The field for the oil engines in dredgers is one which we are only now beginning thoroughly to explore. As regards the Bucket type, there is no doubt that the best method of hitching up the inherent fuel-economy of the oil engine to the slowly-moving chain of buckets is electrically. Already the French have set an example in this connection in an important little bow well self-propelling vessel, in which Sulzer engines and Alsthom electrical equipment is employed. The design technique for the motor driving the bucket chain is similar to that of the rolling mill motor which is subject to equal shocks and reversals.

France, too, has set the example in the suction hopper field by employing a Diesel electric unit of this kind. As for suction dredgers, the U.S. Army Corps of Engineers, whose duties *inter alia* are those of keeping open navigation to vast rivers of

the American central plains, have done monumental work involving what they call *pipe-line dredges* and in this country are called *suction reclamation* units, in which Diesel engines are direct-coupled to enormous centrifugal pumps. Diesel generators supply current for the whole of the auxiliary purposes of the dredger, including the motor for raising the cutter suction arm, the gear for swivelling this as necessary, the motors for operating the spuds, the lighting, heating and workshop plant on the dredger, and even in some cases its propulsion. These enormous pipe-line dredgers are mounted on box-shaped hulls with scow ends. For propulsion small diameter fast-running screws operate in tunnels and small diameter electric motors are direct connected to them. The dredger field is one which invites early and detailed investigation because of important current developments.

## Scottish Fishery Harbours

The following information relating to the construction and improvement of fishery harbours in Scotland is extracted from the Twenty-ninth Report of the Development Commissioners for the year ended the 31st March, 1939. (Published by H.M. Stationery Office. Price 2s. net).

### Fishery Board for Scotland: Supervision of harbour improvement and dredging schemes: Financial year 1939-40

The Commissioners recommend a grant of £1,702 for the continuance of the maintenance of this supervising department during 1939-40 as compared with a grant of £1,687 for the preceding year. The arrangement previously sanctioned for the employment of a Consulting Engineer in a part-time capacity and a full-time Inspector of Harbour Works was continued.

### Fishery Board for Scotland: Dredging of Scottish Fishery Harbours: Financial year 1938-9

Dredging is undertaken by the Fishery Board for Scotland with two dredgers, acquired by means of a grant from the Development Fund, for hire to the authorities of Scottish fishery harbours. The net cost of maintenance of the dredgers is met from the Development Fund. The value of the dredging carried out is calculated at cost price, including interest on the cost of the vessels and an allowance for depreciation. The Commissioners decide, after considering the recommendations of the Fishery Board for Scotland based on the financial position and prospects of each harbour, what payment, if any, is to be made by the authorities of the harbours dredged.

The value of the dredging carried out by the Board's dredgers during the financial year 1938-39 was estimated at £9,233. Of this amount a total sum of £7,281 was recovered from the authorities of the harbours dredged. Dredging to the value stated was carried out, free of charge to the harbour authorities, at the following harbours:—Cromarty £444, Kyleakin £31, Peterhead £130, Stonehaven £126. The payment to be made for the value—estimated at £1,220—of dredging carried out at Lossiemouth had not been settled at the close of the year.

### Anstruther Harbour

In 1936-37 a grant of £15,000 and loans amounting to £18,000 were sanctioned from the Development Fund to meet the cost of an improvement scheme. Subsequently, the Harbour Author-

ity submitted proposals for variations of the scheme, which involved an increase of £500 in the total cost as recommended by the Fishery Board for Scotland. The Fishery Board also recommended a grant of £2,550 to meet the cost of repair works at the east breakwater, and retaining walls at the quay and boat-building yard. The Commissioners accepted the Board's view that these repair works were essential for the preservation of the fabric of the harbour, and recommended (1) a grant not exceeding £1,050 and (2) a loan of £2,000 to meet the cost of these repair works and the additional cost (£500) of the improvement scheme.

### Burghead Harbour

This harbour is one of the safest in the Moray Firth and the fishing vessels of Lossiemouth, Hopeman and other ports frequently run to it for shelter. The harbour, prior to its acquisition by the Town Council in 1934, had never obtained any State aid, and it was allowed by its previous owners to fall into decay. In 1934 and 1936 grants and loans amounting to £10,000 and £7,250 respectively were sanctioned from the Development Fund in aid of the cost of reconditioning works estimated at £22,250. A loan of £5,000 was also obtained from the Public Works Loan Board. The approved scheme included £1,500 for the construction of a groyne. With the exception of the groyne, on which only £163 had been spent in preliminary and experimental work, the works were completed, but the actual cost exceeded the estimate by £573. The Fishery Board for Scotland stated that the excess expenditure was incurred on approved works and on items which could not be foreseen. The Town Council proposed to construct the groyne over a period of years as experience was gained of its value in protecting the harbour, and applied for a further grant to meet the cost of certain additional works. The Fishery Board recommended additional works mainly on the north and south piers, estimated to cost £3,300. The Commissioners recommended a loan of £2,300, subject to the conditions, among others (1) that expenditure on the groyne be limited to £500 and that the balance (£1,000) of the sum of £1,500 previously allocated for the groyne out of the loan from the Development Fund be transferred to the additional works; (2) that the excess expenditure of £573 already incurred be met by the Town Council.

### Macduff Harbour

In 1937 your Lordships sanctioned a grant not exceeding £1,600 towards the estimated cost (£2,300) of reconditioning

*Scottish Fishery Harbours—continued*

works at the harbour, the balance of £700 to be contributed by the Town Council. The works included the underpinning of the foundation of the inner and outer walls of Lighthouse Pier, at an estimated cost of £280. Following the removal of sea-growths on the surface of the Pier, it was found that the condition of the structure was such that the repairs required were much in excess of those originally contemplated. The cost was finally estimated at £4,400 and as a sum of £280 had already been provided, application was made for the further sum of £4,120 required. The Commissioners accepted the considered opinion of the Fishery Board for Scotland that the further repairs were essential to preserve the fabric of the pier and that the estimated cost was reasonable, and recommended a grant of £4,120.

**Nairn Harbour**

In their last report (pp. 46-7) the Commissioners referred to a grant of £2,750 from the Development Fund for reconditioning works at the harbour. It was a condition that the Town Council should levy for harbour purposes an increased contribution from the Burgh assessments equivalent to a rate of 2s. in the £ during the two years 1938-9 and 1939-40. Before the work was started, the harbour suffered further damage by storms and high tides, and the Town Council applied for an additional grant from the Development Fund.

The Fishery Board for Scotland estimated the total cost of repairs at £6,300 and recommended that the Development Fund grant should be increased from £2,750 to £4,350, that the Town Council should levy the increased rate of 2s. for three years instead of two years, and that the whole of the proceeds be devoted to repairs, leaving the question of a contribution towards the cost of dredging to be considered later. The Commissioners, after further details of the position at Nairn had been obtained, agreed to accept the Fishery Board's proposals and made their recommendation accordingly.

**Portknockie Harbour.**

In 1936-7 grants amounting to £3,750 from the Development Fund were sanctioned to meet the cost of reconditioning works at the harbour. In February 1938 application was made by the Town Council for a further grant in order to complete the reconditioning scheme. The damage to the foundations of the outside wall of the north pier had considerably increased since it was surveyed in 1935. After some work had been done on the outer spur pier it was found that the necessary repairs would be much more expensive than could have been foreseen. The work had been slow and costly owing to the incessant swell which had greatly impeded the divers employed. The Fishery Board for Scotland estimated that a further grant of £3,400 would be needed to render the harbour safe and serviceable for the requirements of the fishermen. The harbour is a home port and the village depends wholly on the fishing industry. The Burgh levied a rate of 2s. in the £ for harbour purposes and there was no prospect of any further local contribution. The Fishery Board recommended the application for approval, as it was satisfied that the Town Council were unable to meet the further expenditure which was necessary for the maintenance of the fabric. The Commissioners accepted the Fishery Board's views and recommended a grant of £3,400.

**Whitby Harbour**

In 1936 Your Lordships sanctioned a grant from the Development Fund to the Whitby Urban District Council of such sum not exceeding £3,205 as might be required to meet one-half the cost of the construction of a jetty at the Dock End, Whitby, in order to complete the scheme of harbour development initiated by the Council. The work was, however, postponed and the Council submitted plans of a modified scheme for the Dock End, and explained that revised plans and estimates had been prepared because the rise in the cost of construction since the estimate of £6,410 was made for the original scheme would now increase the cost of that scheme to £9,000. The new structure proposed consisted as before of two sections, an inner section forming a retaining wall in continuation of the south wall of the Dock End basin and an outer section providing a jetty. It was not considered desirable to depart from the form of construction originally proposed regarding the inner section. In the case of the outer section, however, by substituting timber for steel and rubble construction the cost would be reduced from £9,000 to £7,500. The Harbour Engineer of the Ministry of Transport reported that although the jetty now proposed was less substantial than that previously contemplated, satisfactory protection for boats would be afforded by it. He suggested amendments to the scheme of construction work. The Ministry of Agriculture and Fisheries considered the revised proposals and, in view of the increase in the cost of the original scheme and the desirability of securing that the jetty scheme and the dredging scheme should proceed together, agreed to the modified and less costly proposals and recommended that the grant of £3,205 already sanctioned should be increased to £3,750 to meet one-

half the cost of the revised scheme. The Commissioners noted that owing to the delay in the commencement of building operations, during which prices had risen considerably, the Council had submitted a scheme which, though less satisfactory, was more costly than that already approved by Your Lordships. The Commissioners would have preferred the adoption of the original scheme and while they were prepared to recommend that the grant of £3,205 in aid of the original scheme, they did not feel able to recommend the additional grant of £545 for which the Council applied. They agreed that some assistance in meeting the higher constructional costs should be given and recommended that the grant should be increased from £3,205 to £3,500. It was a condition that should the Council decide to proceed with the revised scheme, the amendments in methods of construction suggested in the Engineer's report, above referred to, should be adopted.

**Wick Harbour**

Owing to the difficult financial position of Wick Harbour Trustees, whose revenue has fallen off greatly because of the depression in the herring industry, the most urgent repairs have in recent years been effected by grants from the Development Fund. During the year under review an application was received for a grant of £4,646 to meet the cost of reconditioning works. The Fishery Board for Scotland considered that the repairs recommended by their Consulting Engineer, estimated to cost £2,590, were the minimum necessary to preserve the harbour fabric, and the Board was satisfied that the Trustees were not in a position to meet any part of the cost. The Commissioners agreed with the Board's views and accordingly recommended a grant of £2,590 to meet the cost of the works proposed by the Board's Consulting Engineer.

**Financial Summary**

(a) GRANTS.		£
Fishery Board for Scotland: Supervision of harbour improvement and dredging schemes, year 1939-40	...	1,02
Anstruther: Repairs and improvements (see also loan below)	...	1,50
Cromarty: Dredging	...	44
Kyleakin: Dredging	...	31
Macduff: Repairs	...	4,120
Nairn: Repairs	...	£1,600
Peterhead: Dredging	...	130
Portknockie: Reconditioning	...	3,400
Stonehaven: Dredging	...	126
Whitby: Construction of jetty at Dock End (additional)	...	295
Wick: Further reconditioning	...	2,590
(b) LOANS.		
Anstruther: Repairs and improvements (see also grant above)	...	2,000
Burghead: Reconditioning and repairs	...	2,300
Total	...	£19,788

\*In addition to a grant of £2,750 recommended last year.

\*In addition to grant of £3,205 approved December, 1936.

**Port of Buenos Aires**

(concluded from page 146)

since, as I have indicated, it is a question of works suitable for general interests. These works defray not only their cost, but convert it into regular rental, because, as soon as they are put into commission, there will be an intensity fairly in conformity with the statistics.

The Legislature has analysed this situation for more than 30 years, establishing its essential and rent-producing character. Ministers of Executive Power have considered it in identical form and all are agreed that it is a state of affairs requiring attention for the benefit of the country, of traffic and of the commerce which is carried on in this part of the port.

The works have been planned so as to avoid overlapping or, more correctly, anything that can represent duplication of functions, adopting the most modern ideas in their disposition and lay-out so as to satisfy the present, while bearing in mind the future needs of the port and in this respect taking care that the provision is ample and permits the development in full of the Customs zone.

In order to contemplate all these problems, in order to discover solutions, and, in a word, in order to establish the present project of the Port of Coastal Traffic and Riverside Station which is submitted to the consideration of the President of the Nation, I have already adopted as my point of view the exclusive satisfaction of general interests. At the same time, however, I have had regard to lesser interests which can exist, though I think that the more reputable they are, the more they would give way when there are general interests of higher importance to be considered, and above all that of economy, as I have urged. I trust that the full documentation provided will lead to the same conclusions as my own on all those matters which I have analysed so that on the clear principles which must regulate all public undertakings the country may visualise this project, which I consider to be of real necessity and positive benefit.